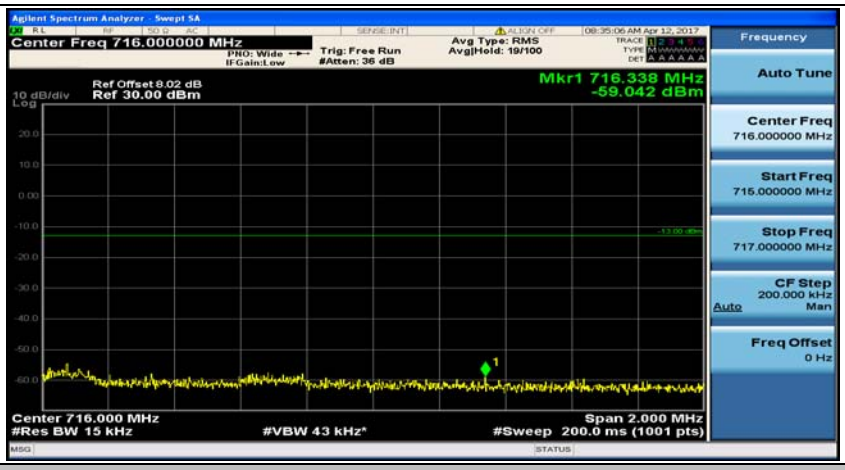
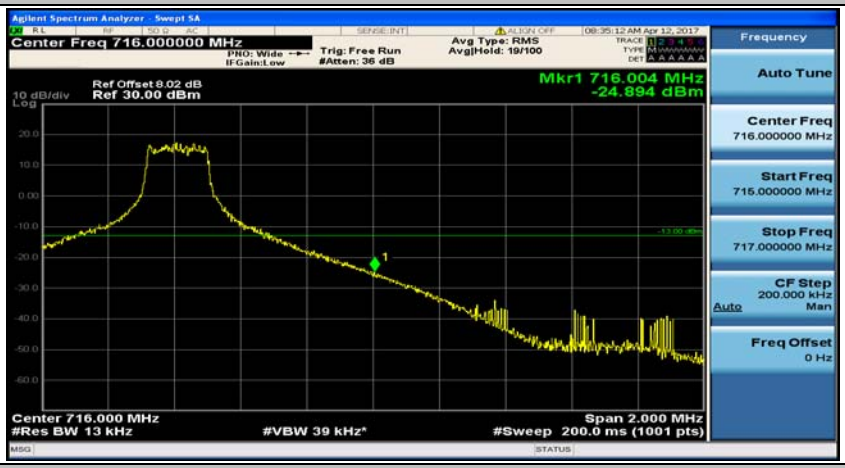
Channel Bandwidth: 10 MHz_LCH_QPSK_50RB#0

Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#0

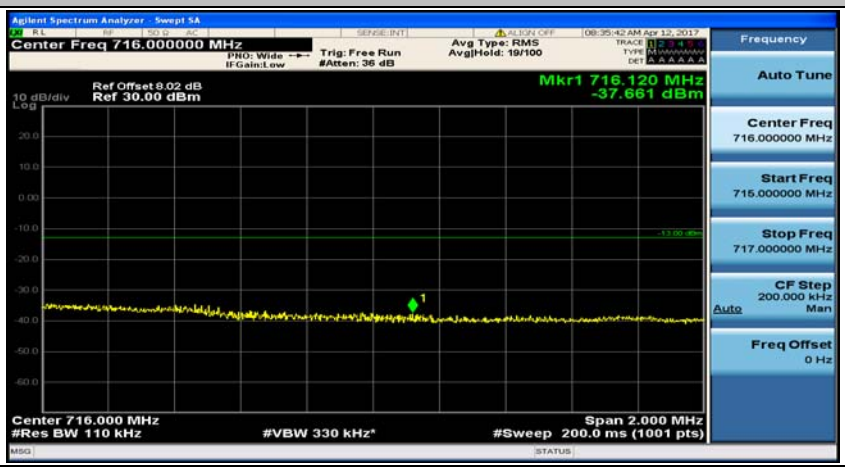
Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#24



Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#49



Channel Bandwidth: 10 MHz_HCH_QPSK_25RB#0



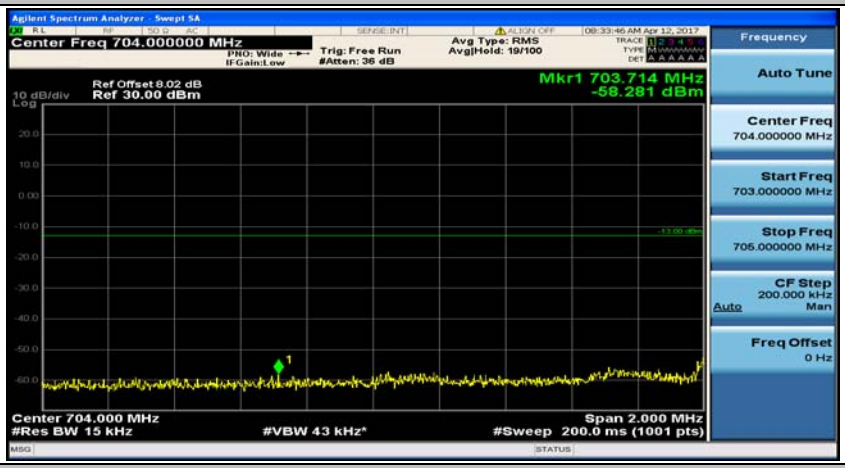
Channel Bandwidth: 10 MHz_HCH_QPSK_25RB#12

Channel Bandwidth: 10 MHz_HCH_QPSK_25RB#25

Channel Bandwidth: 10 MHz_HCH_QPSK_50RB#0

Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#0

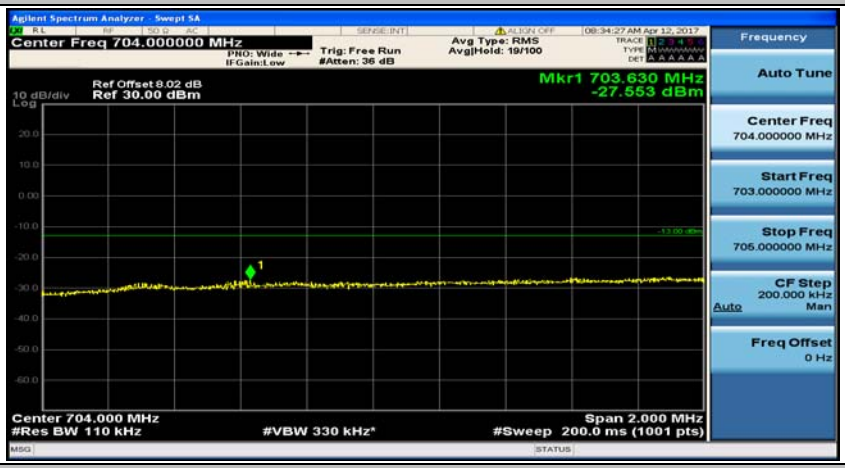
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#24



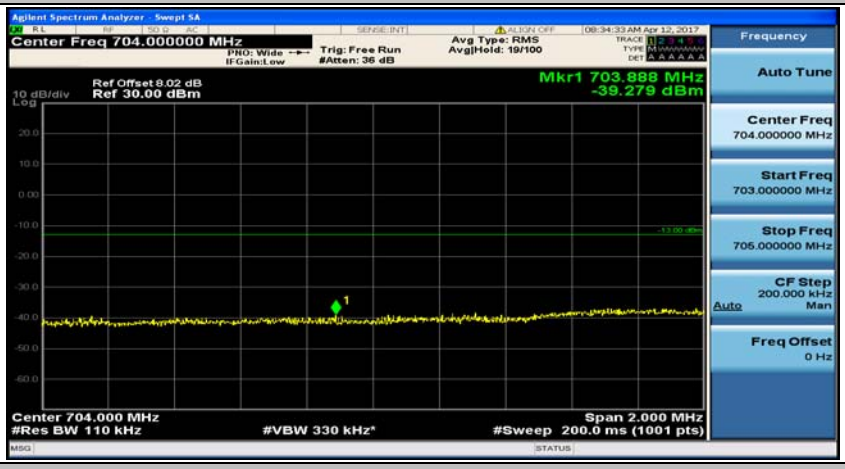
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#49

Channel Bandwidth: 10 MHz_LCH_16QAM_25RB#0

Channel Bandwidth: 10 MHz_LCH_16QAM_25RB#12



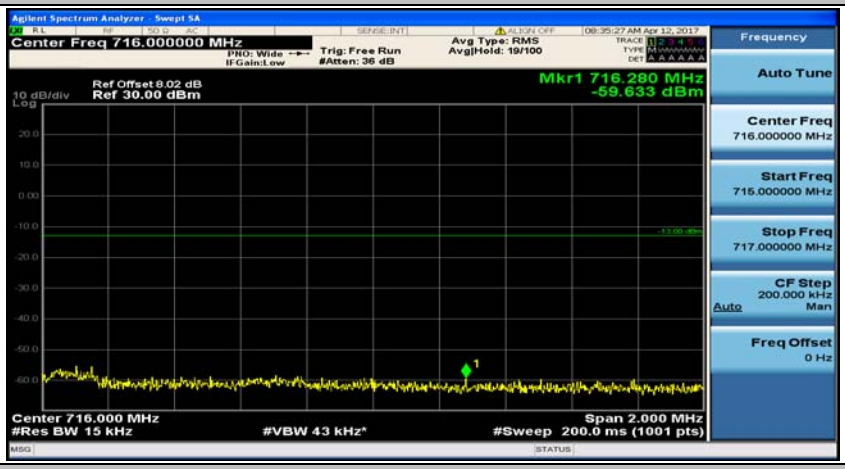
Channel Bandwidth: 10 MHz_LCH_16QAM_25RB#25



Channel Bandwidth: 10 MHz_LCH_16QAM_50RB#0

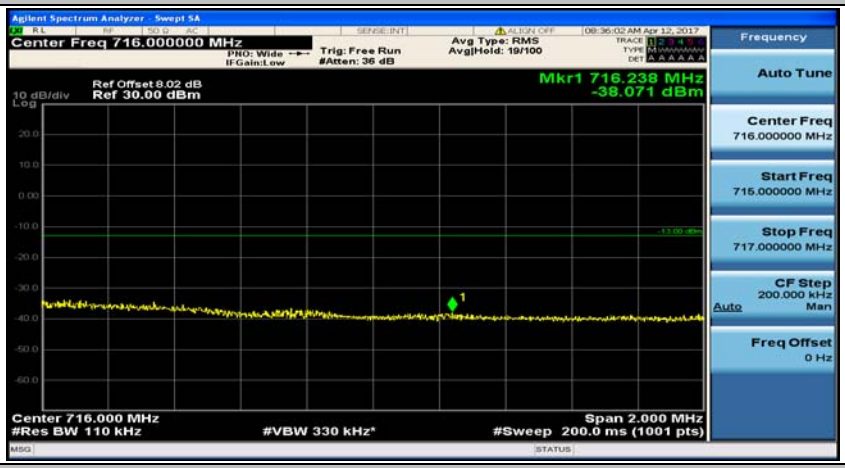
Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#0

Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#24

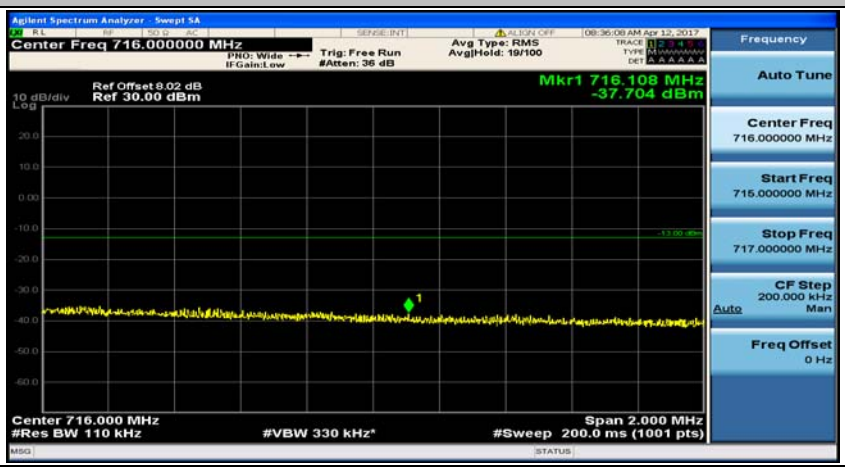


Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#49

Channel Bandwidth: 10 MHz_HCH_16QAM_25RB#0



Channel Bandwidth: 10 MHz_HCH_16QAM_25RB#12



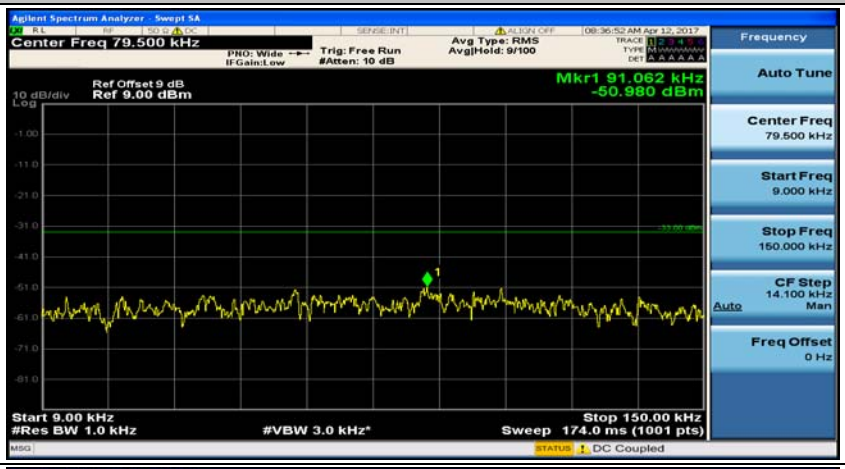
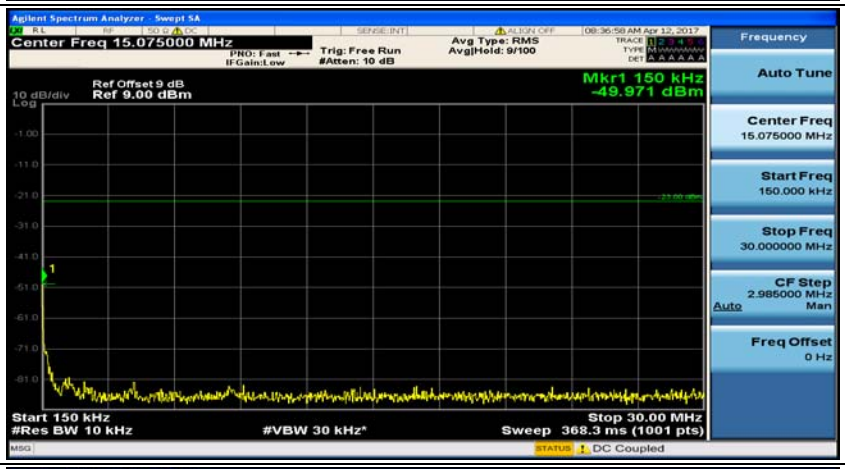
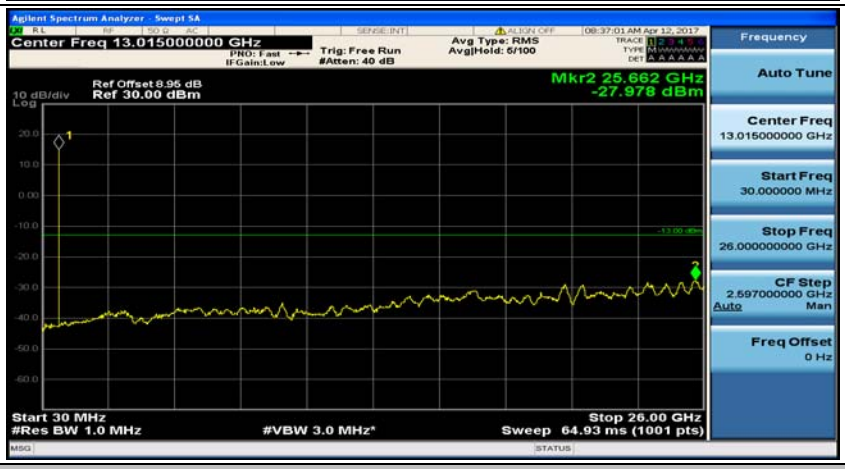
Channel Bandwidth: 10 MHz_HCH_16QAM_25RB#25

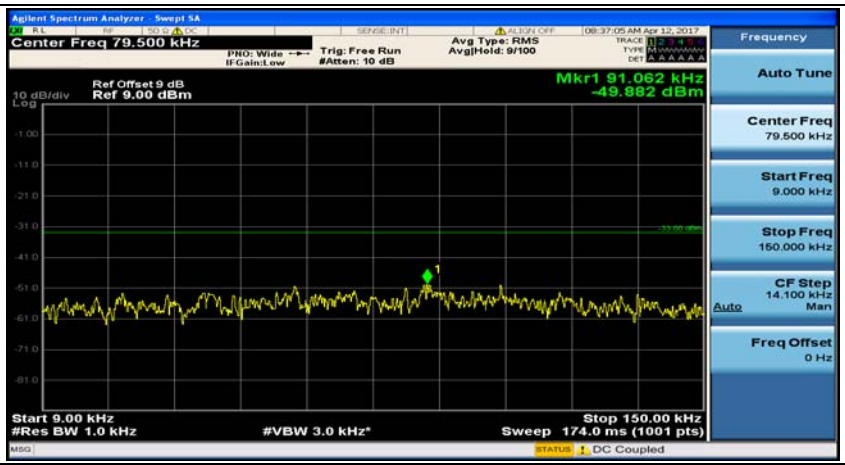
Channel Bandwidth: 10 MHz_HCH_16QAM_50RB#0

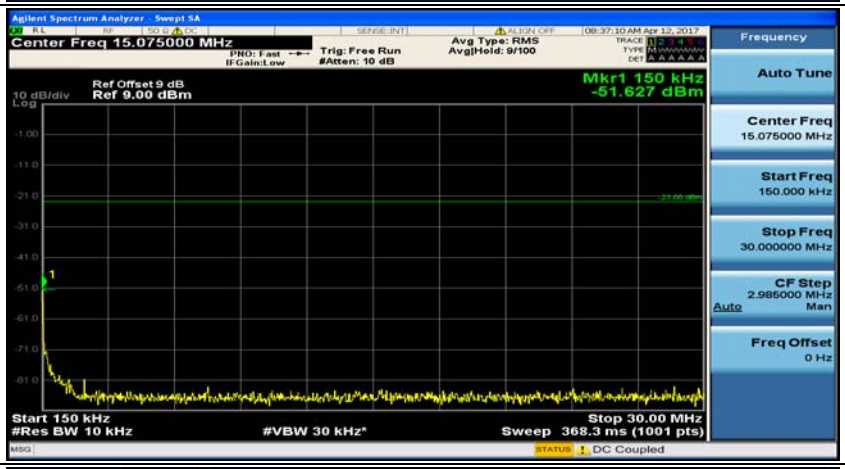
Appendix E: Conducted Spurious Emission

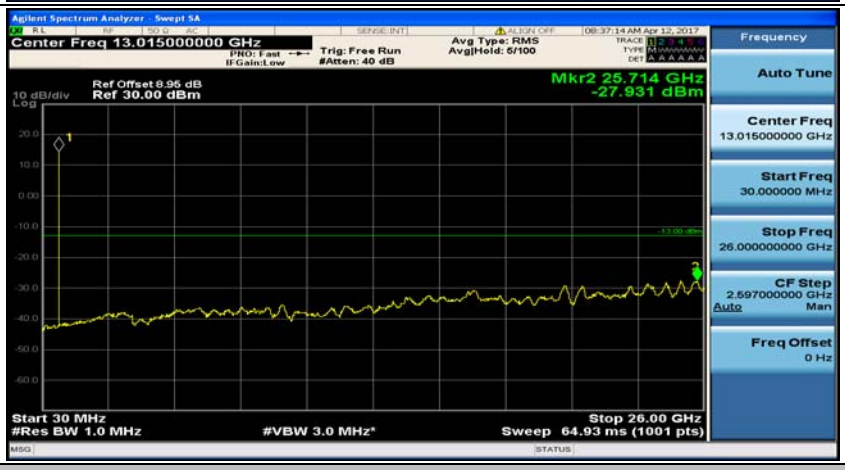
Test Graphs

Channel Bandwidth: 5 MHz

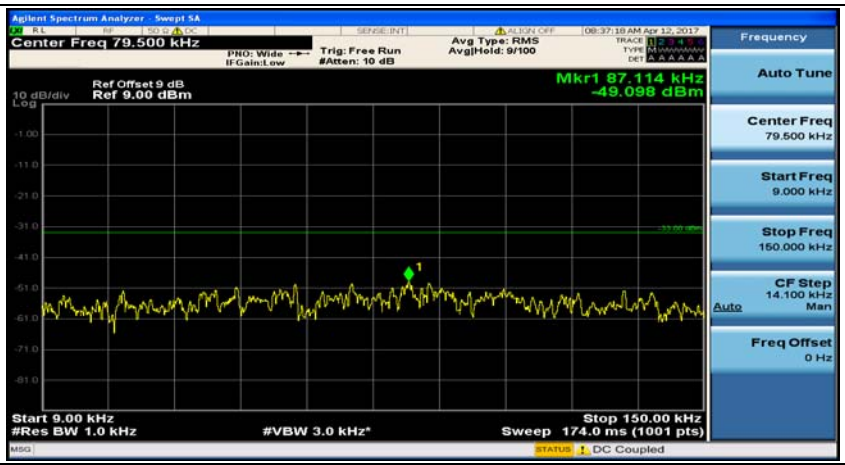
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#0



(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#12

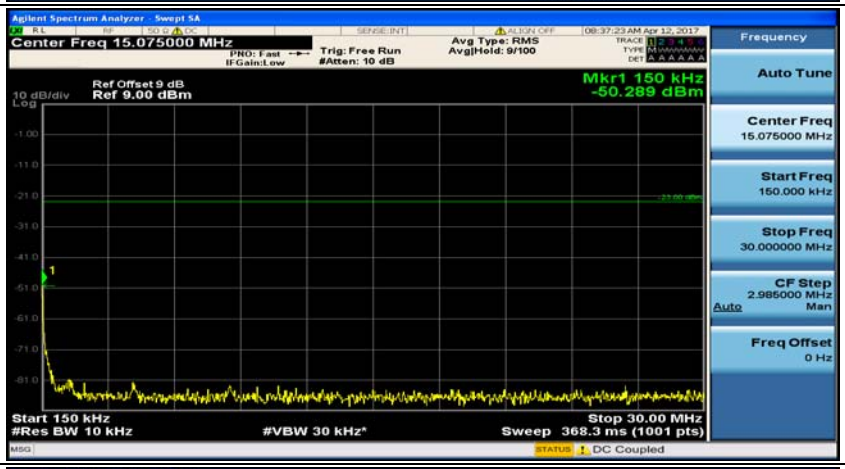


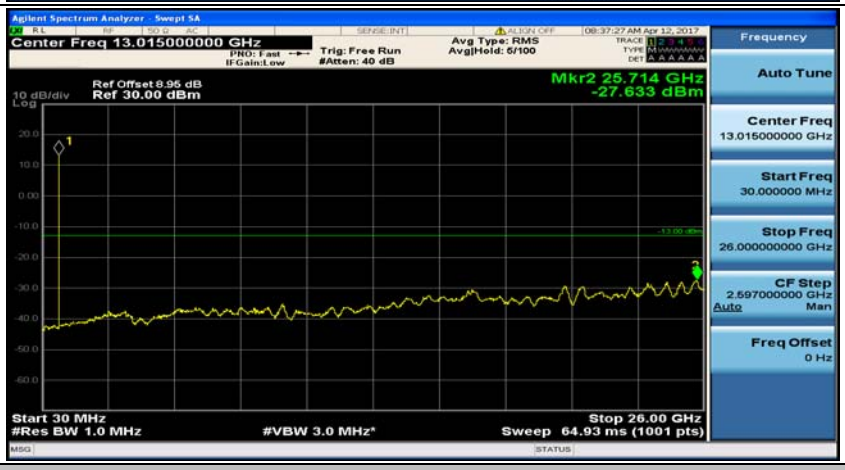




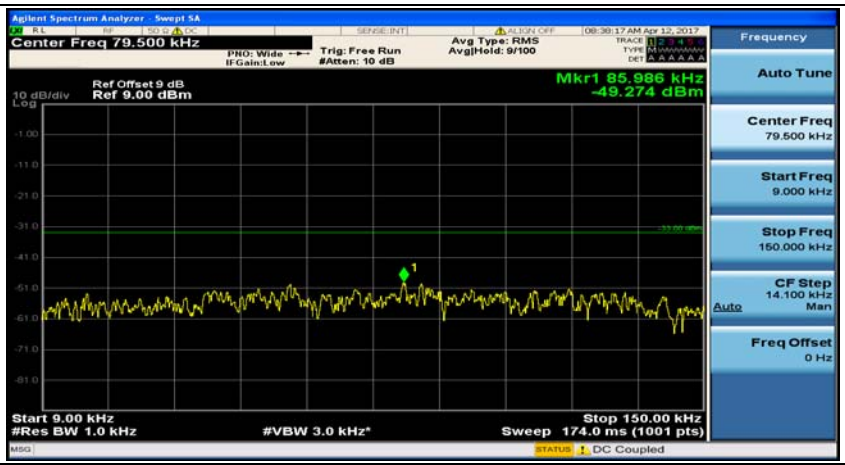
(Channel Bandwidth: 5 MHz)_LCH_QPSK_1RB#24

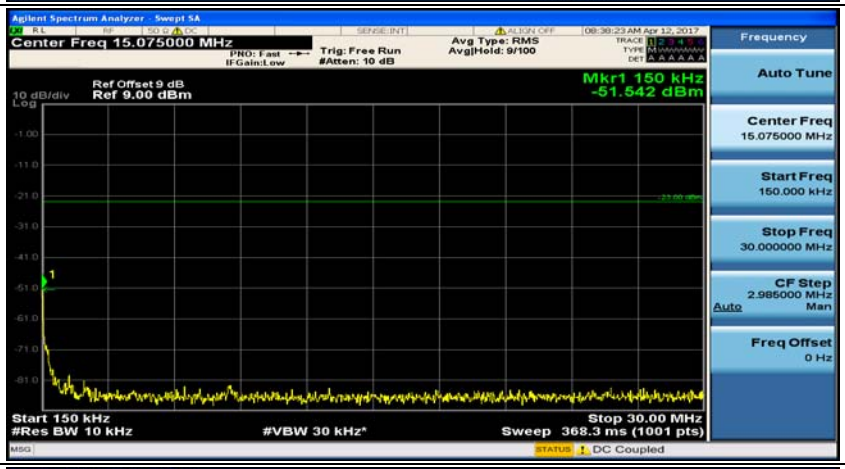


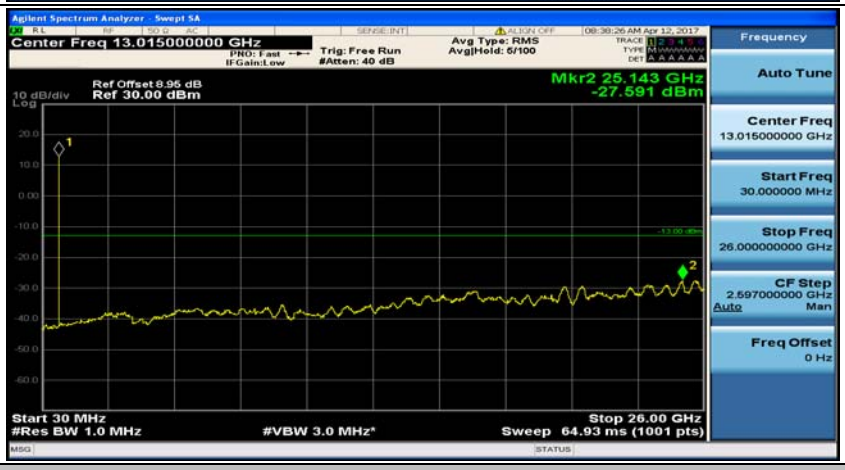




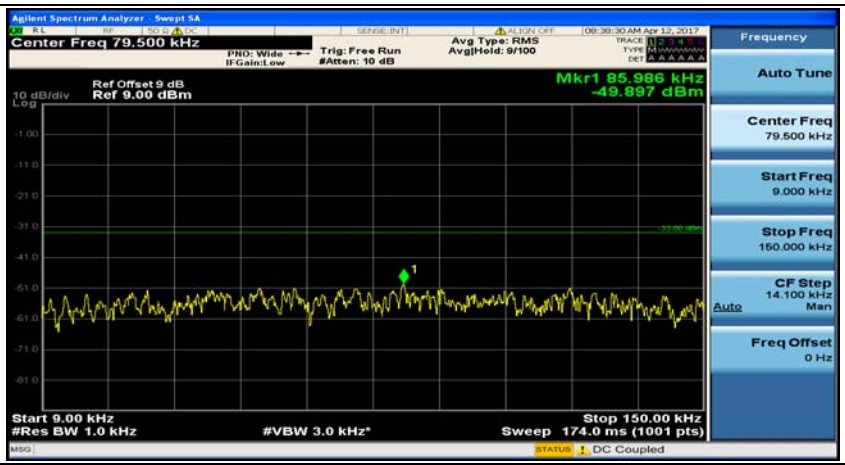
(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#0

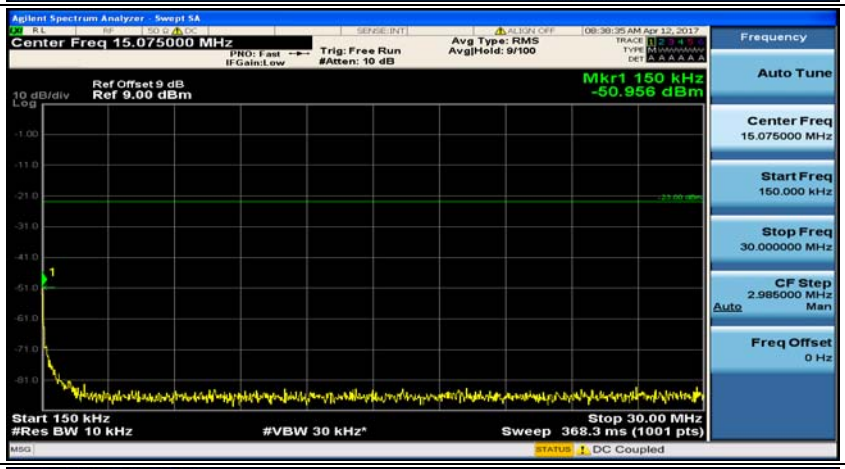


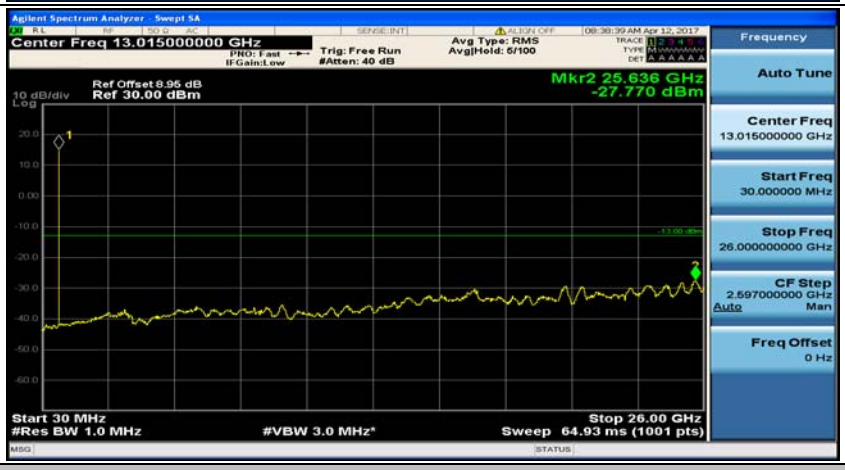




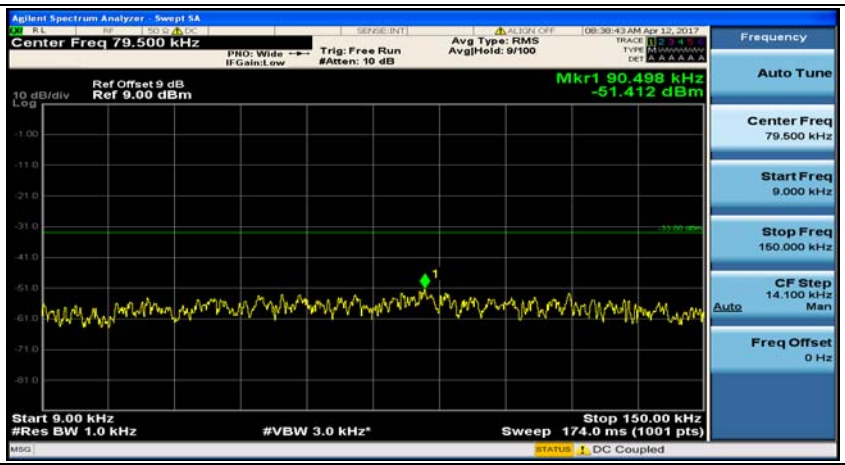
(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#12

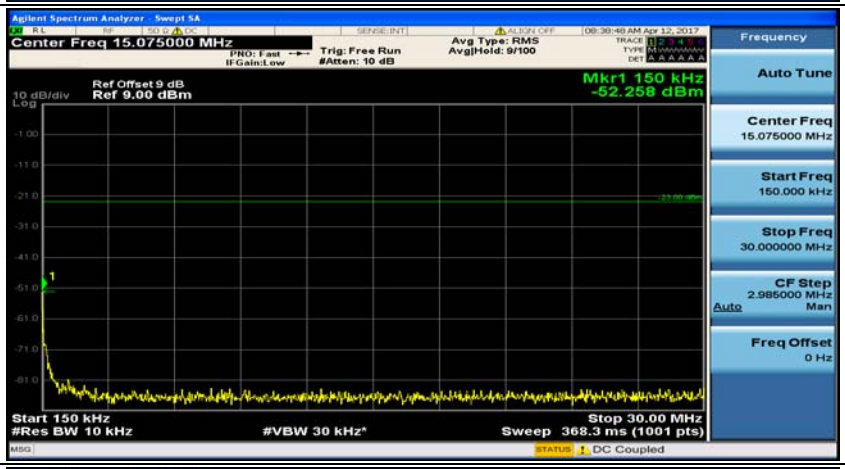


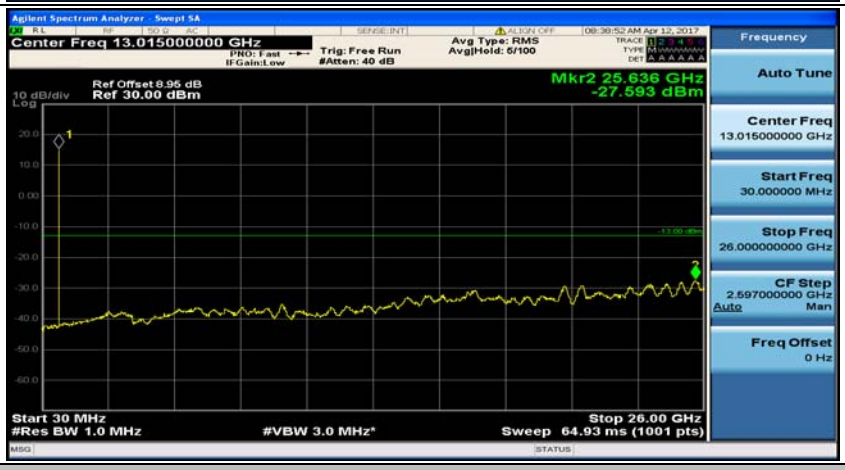




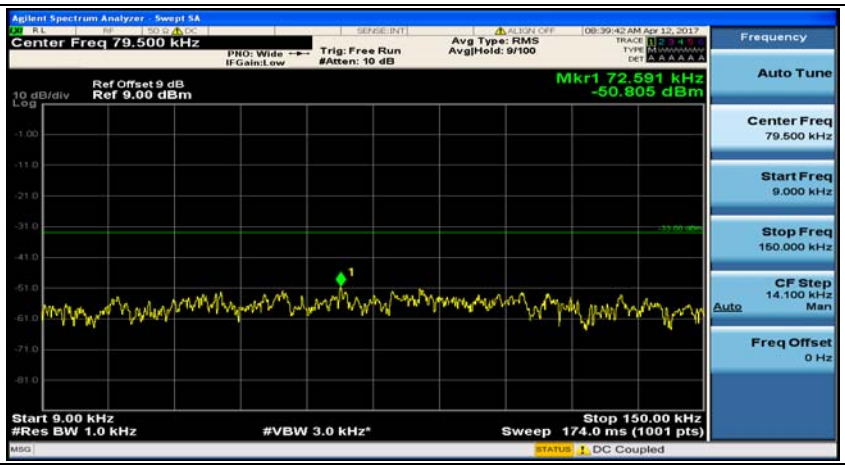
(Channel Bandwidth: 5 MHz)_MCH_QPSK_1RB#24

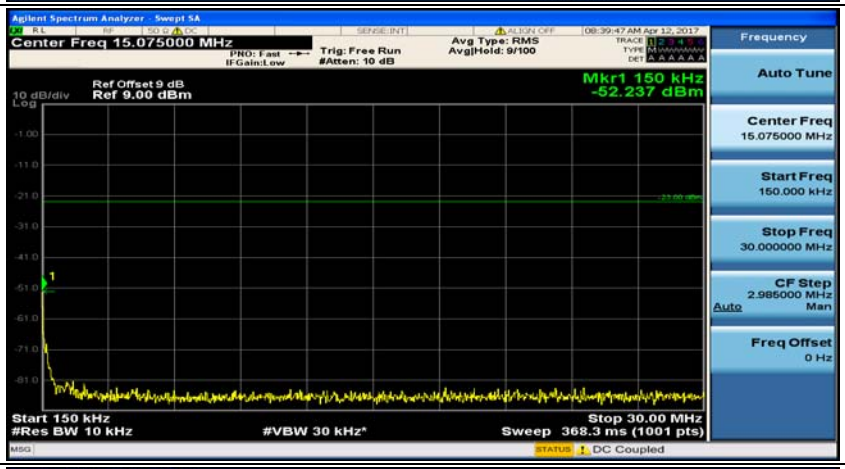


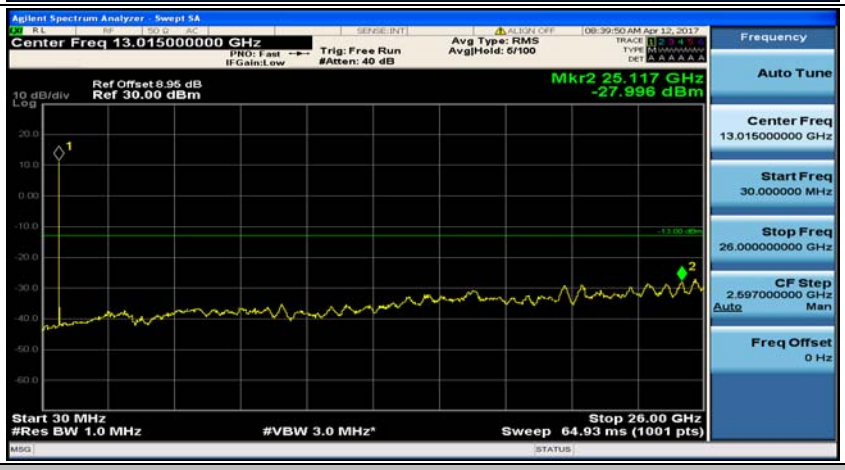




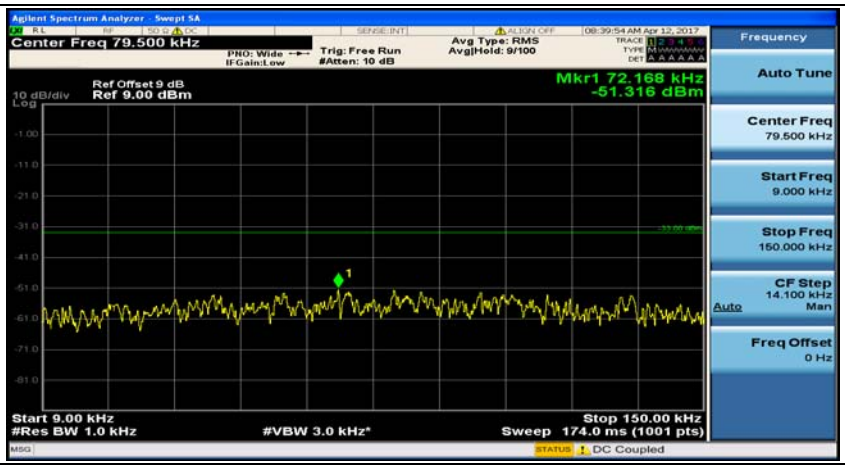
(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#0

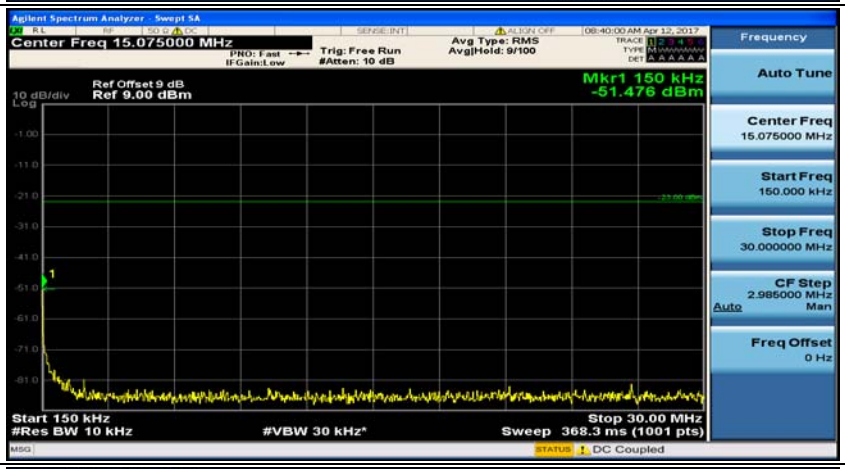


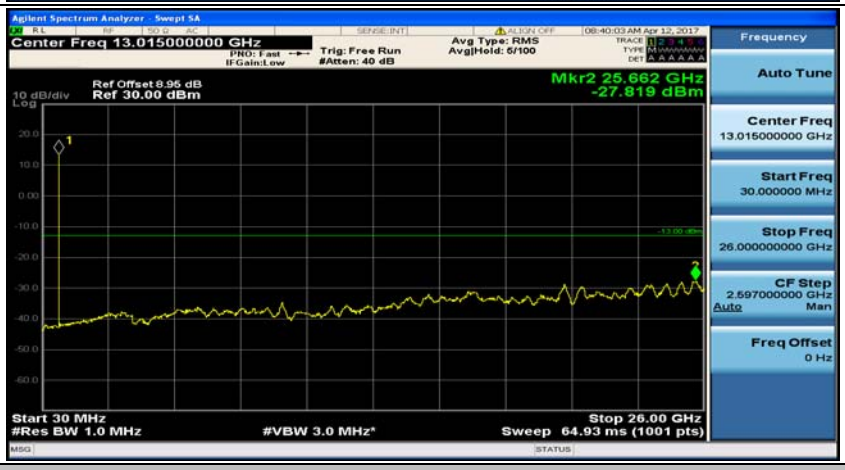




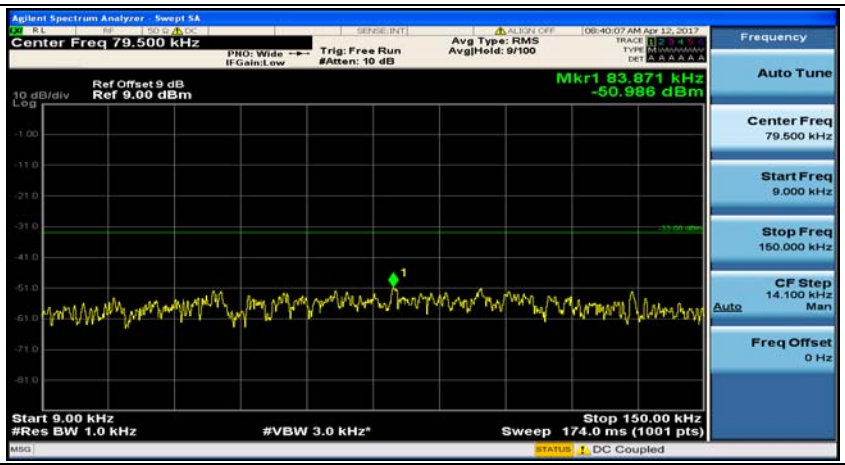
(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#12

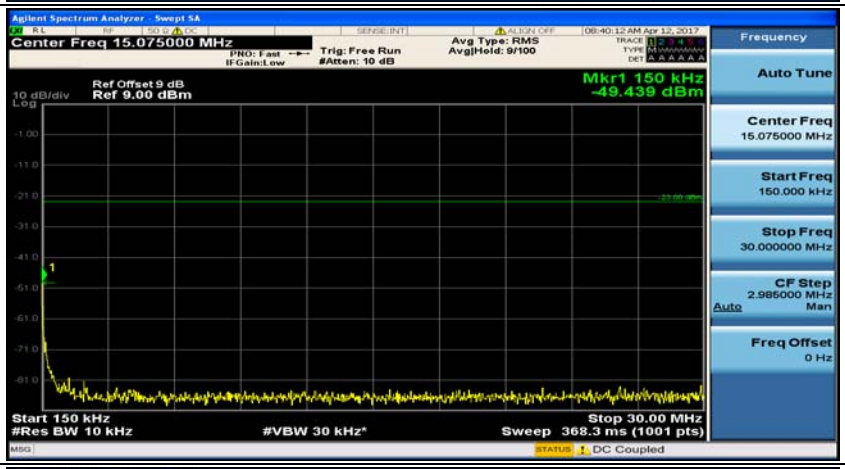


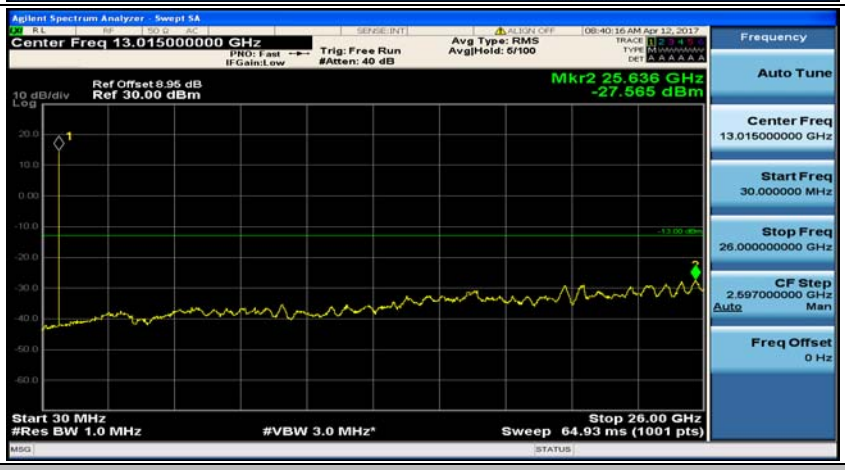




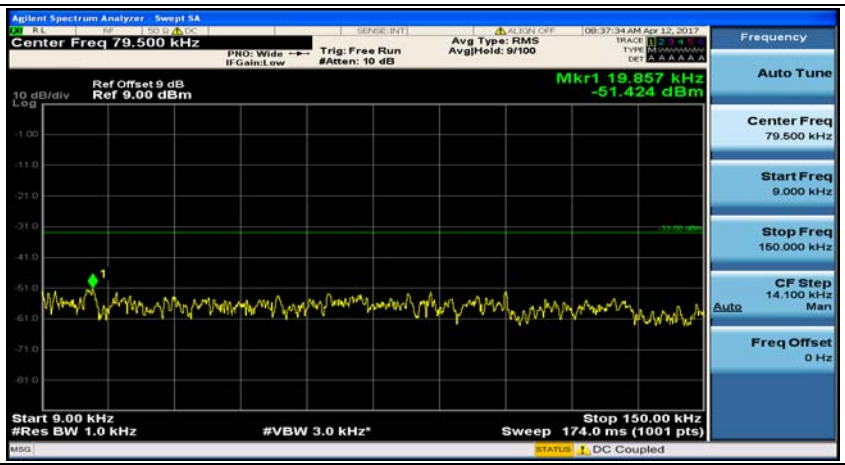
(Channel Bandwidth: 5 MHz)_HCH_QPSK_1RB#24

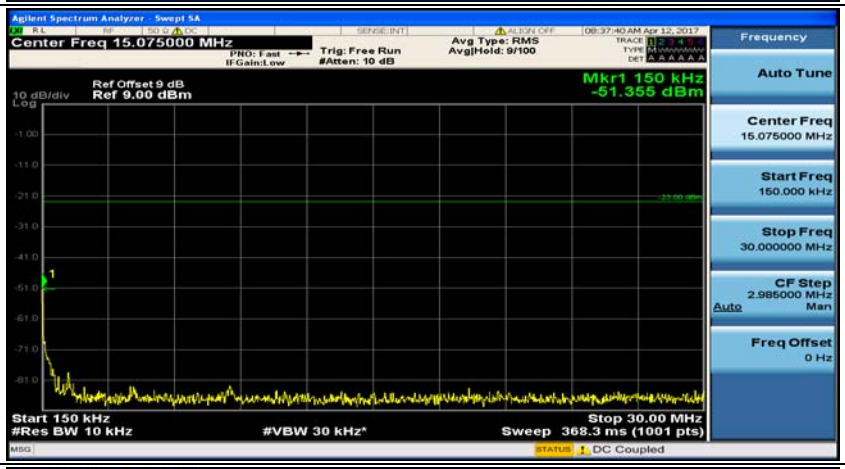


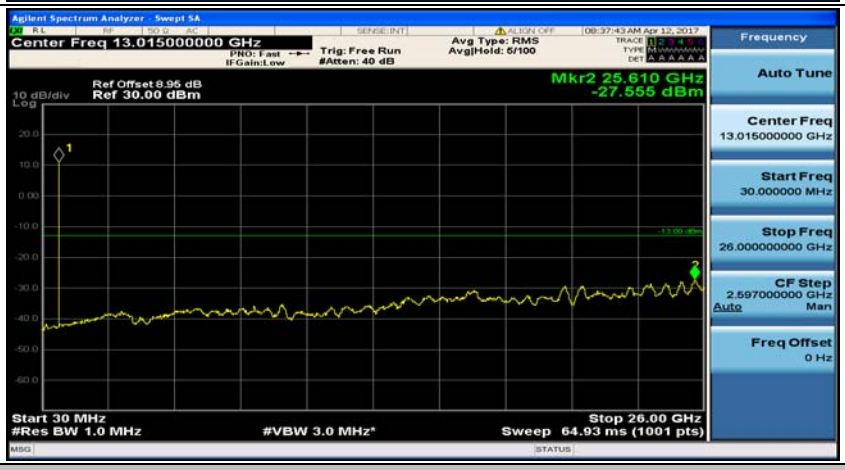




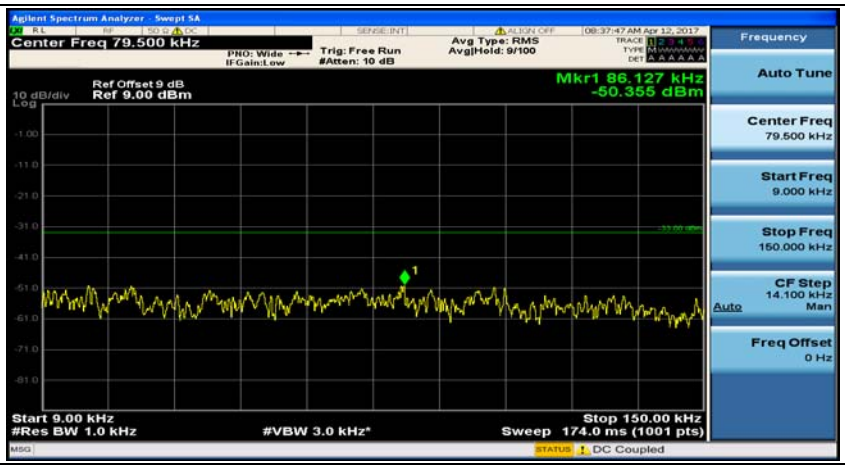
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#0

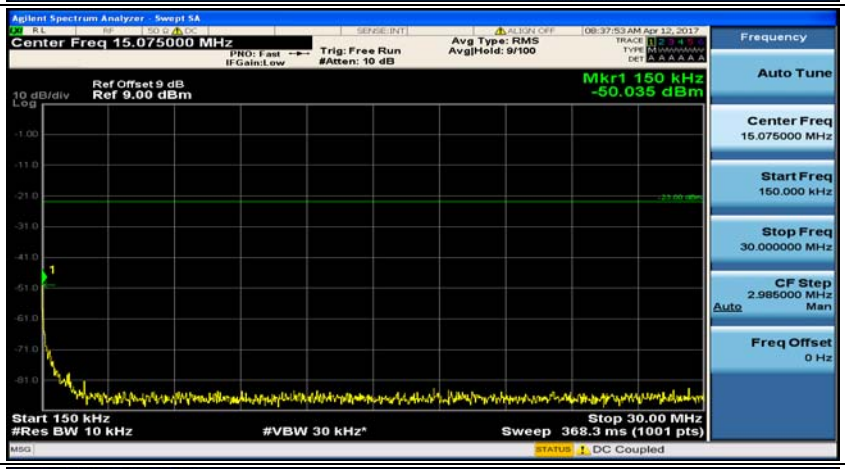


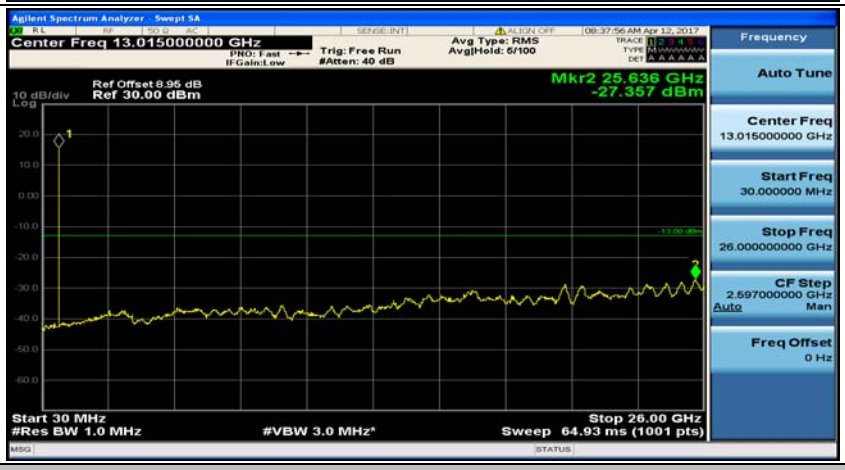




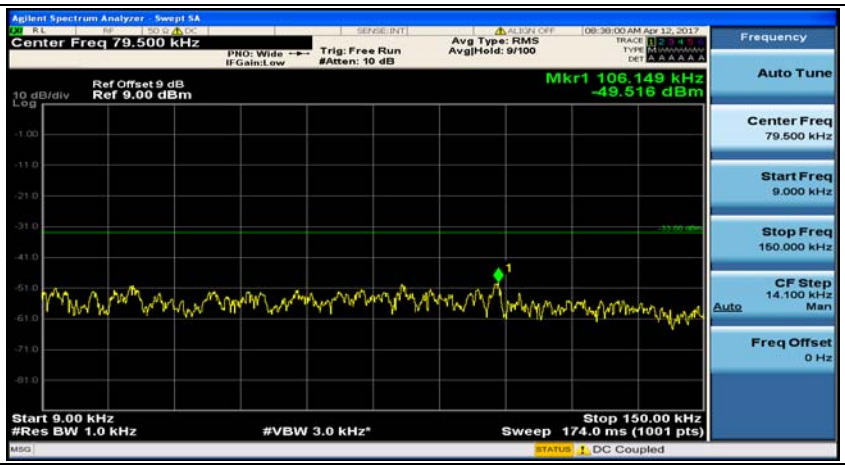
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#12

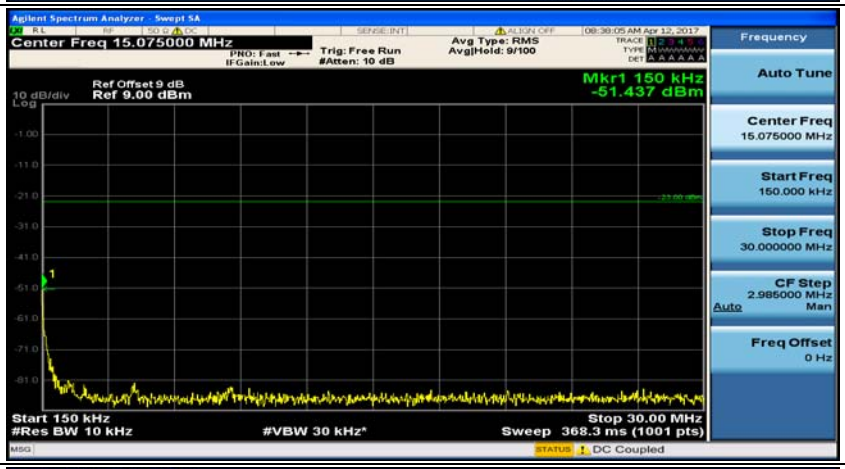


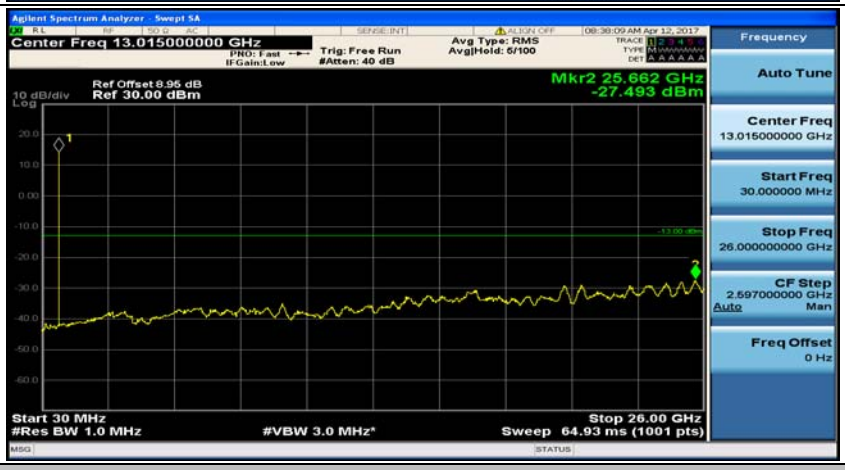




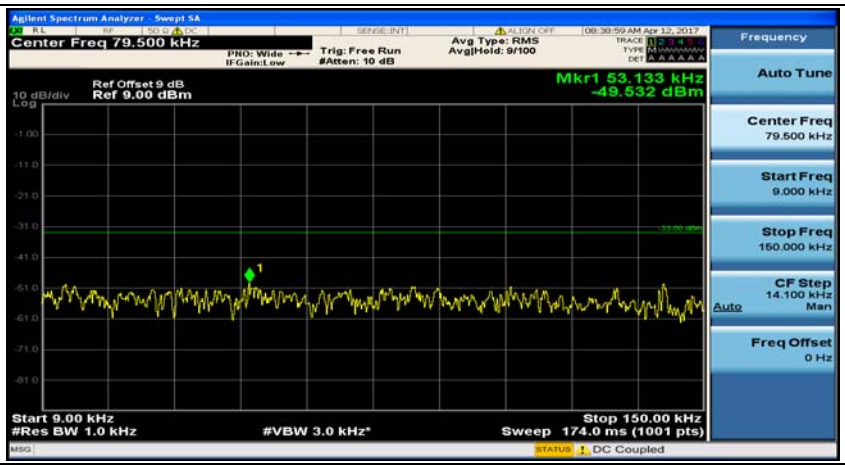
(Channel Bandwidth: 5 MHz)_LCH_16QAM_1RB#24

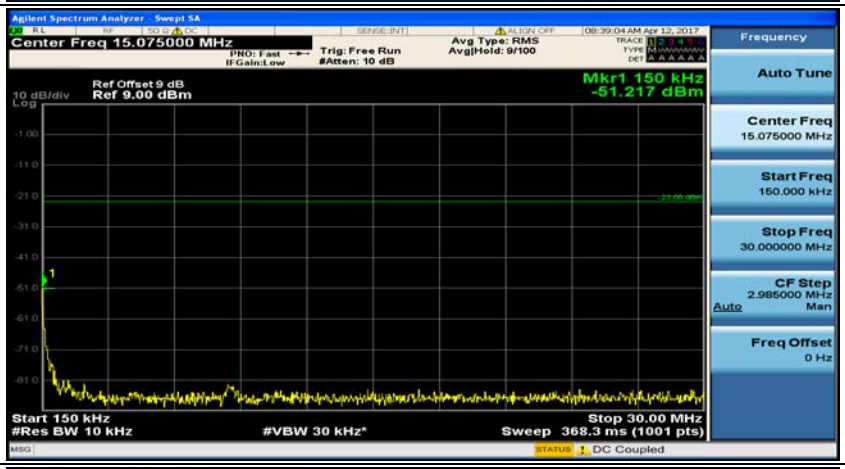


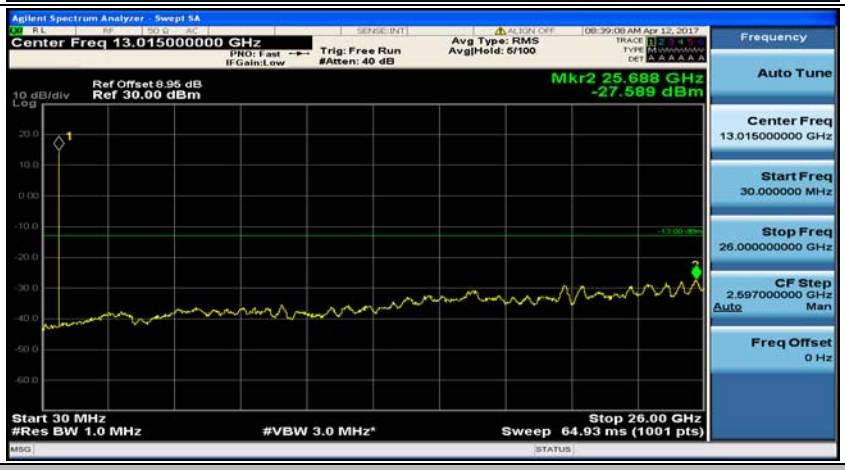




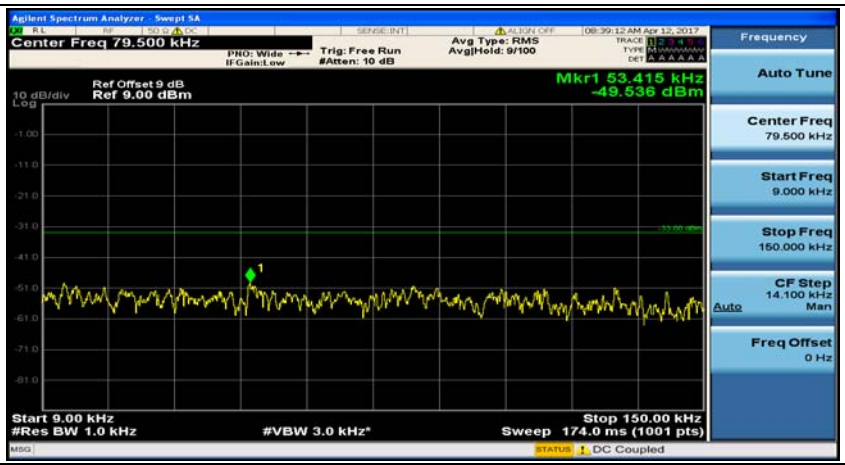
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#0

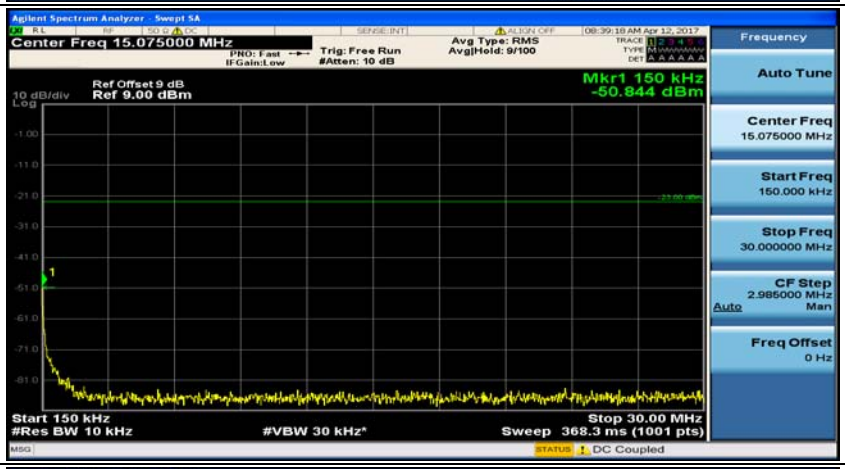




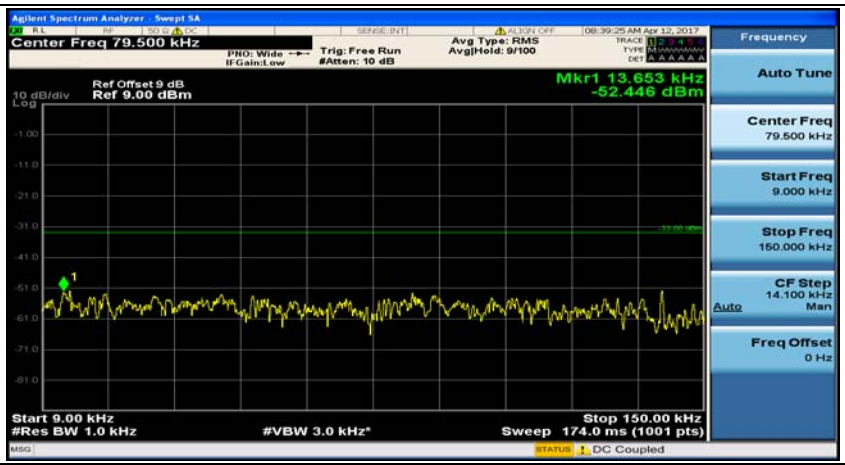


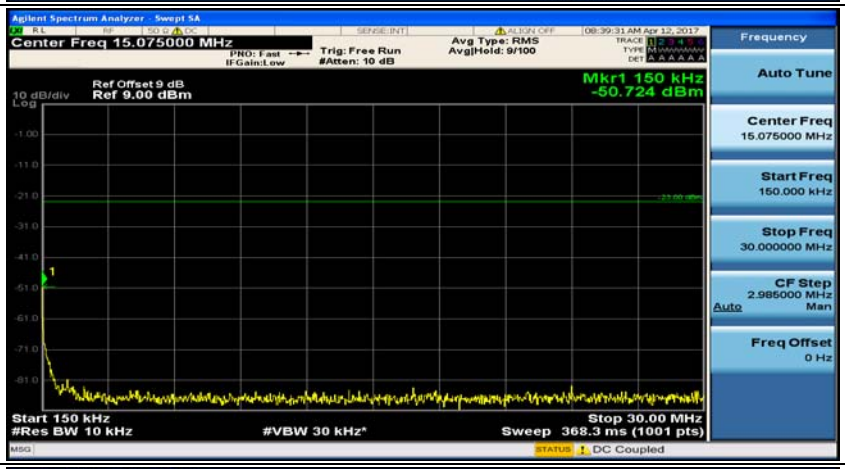
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#12

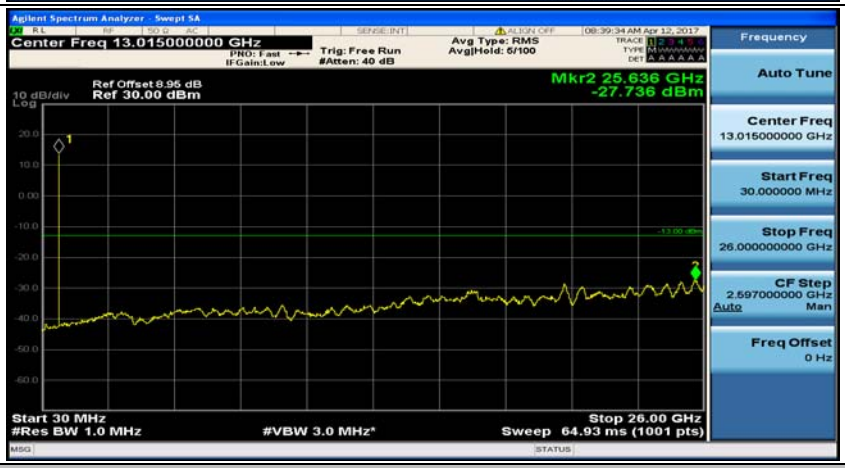




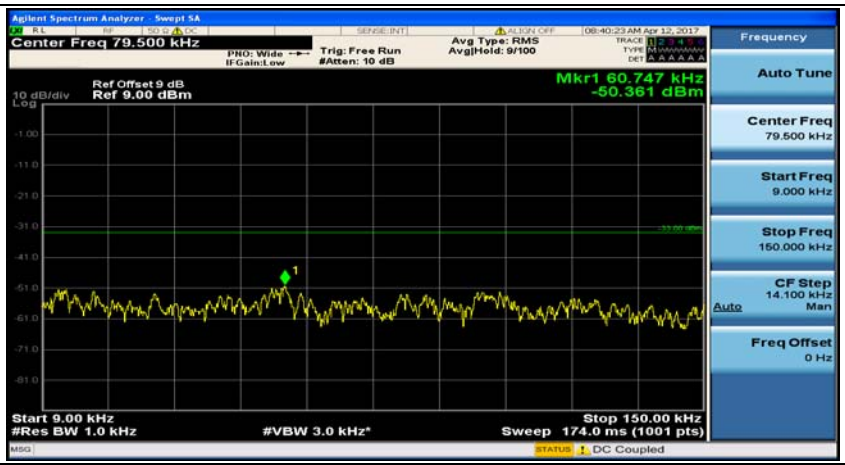
(Channel Bandwidth: 5 MHz)_MCH_16QAM_1RB#24

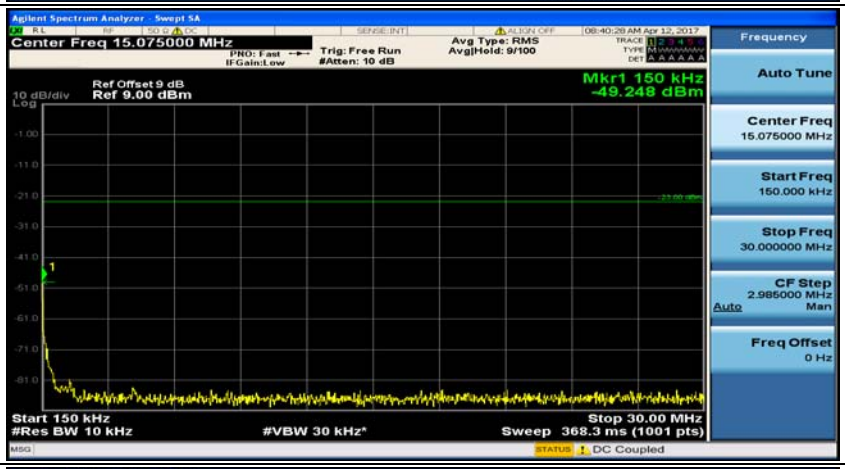


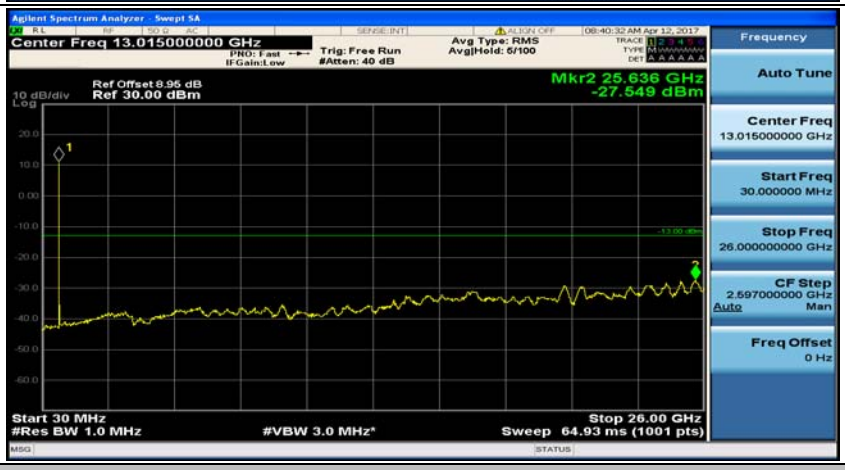




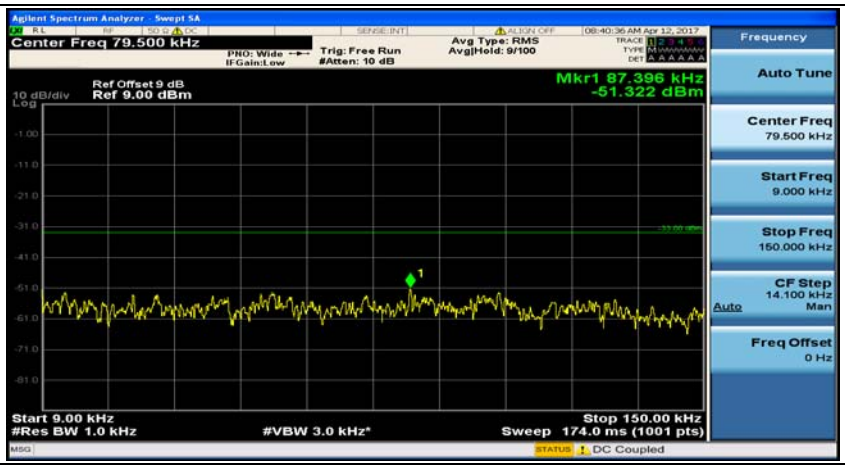
(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#0

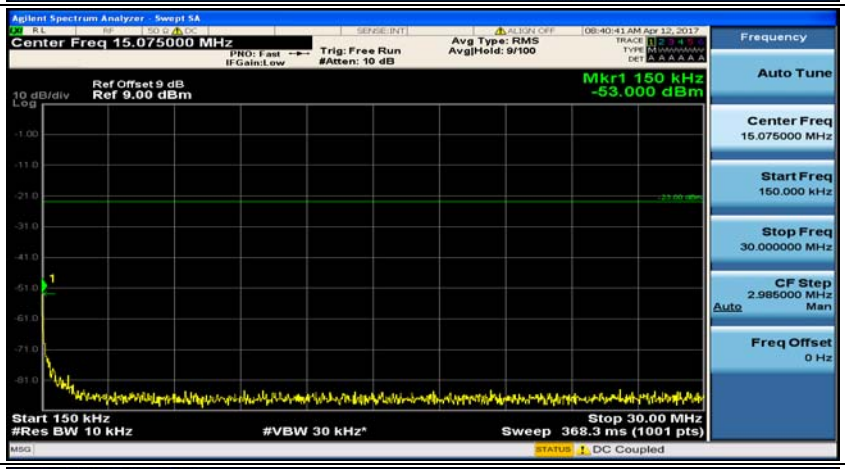


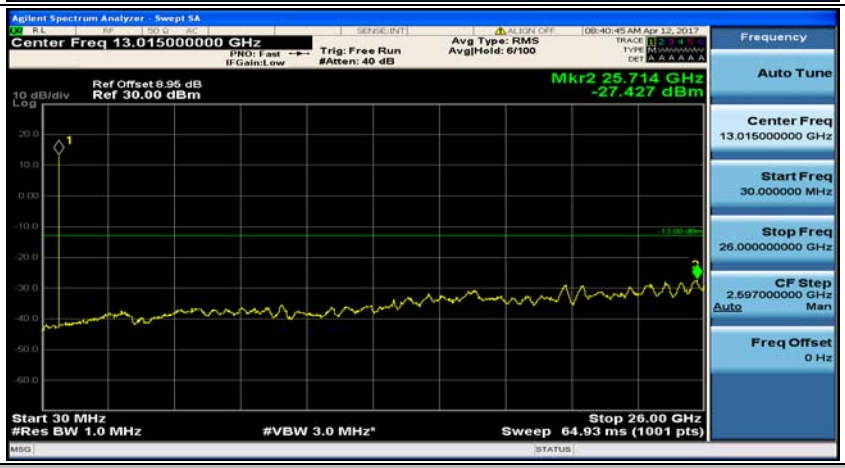




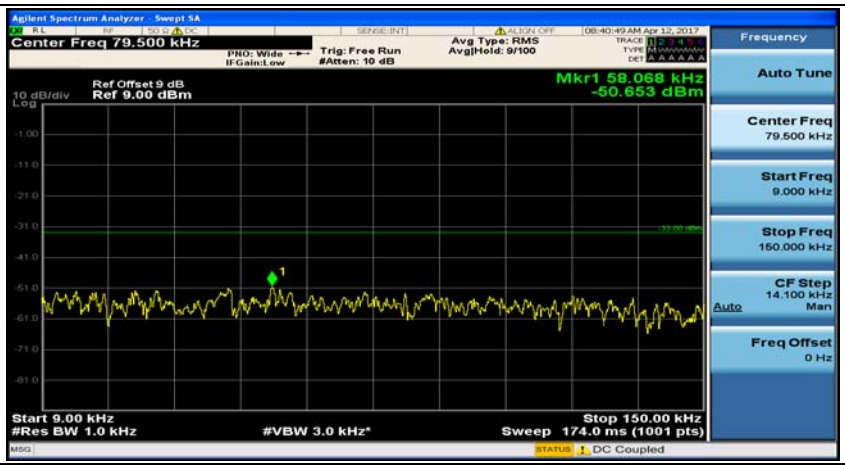
(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#12

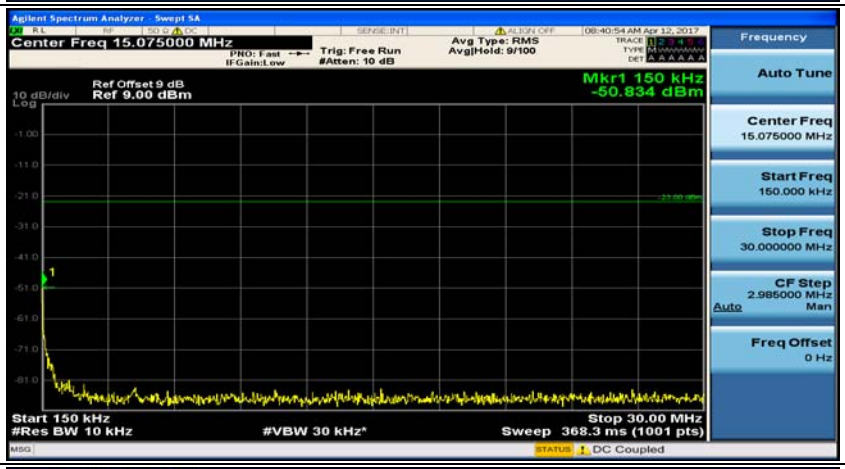


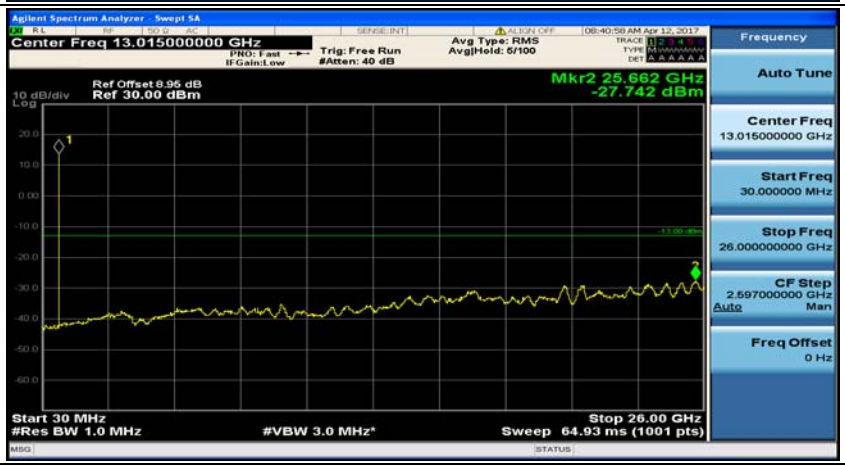




(Channel Bandwidth: 5 MHz)_HCH_16QAM_1RB#24

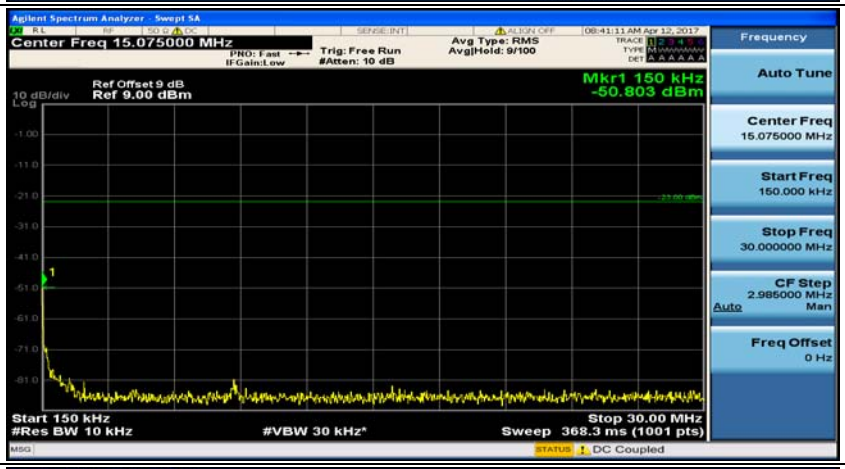
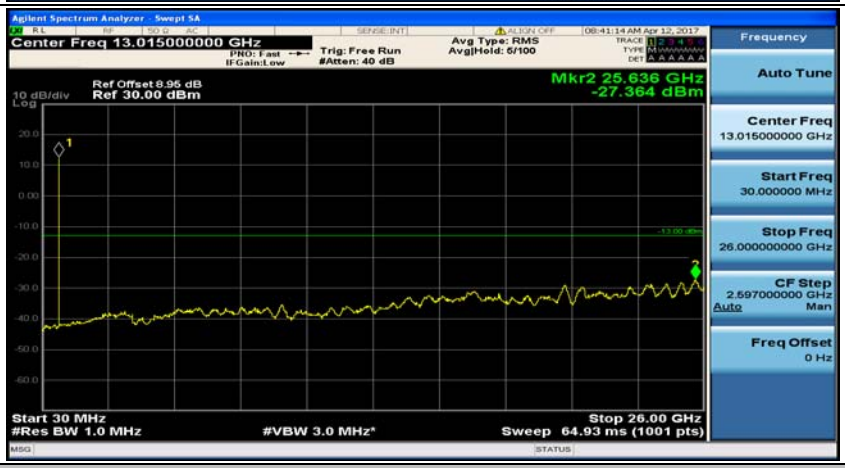

Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
08:40:49 AM Apr 12, 2017
Frequency
Auto Tune
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 58.068 kHz
-50.653 dBm
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 pts)
DC Coupled

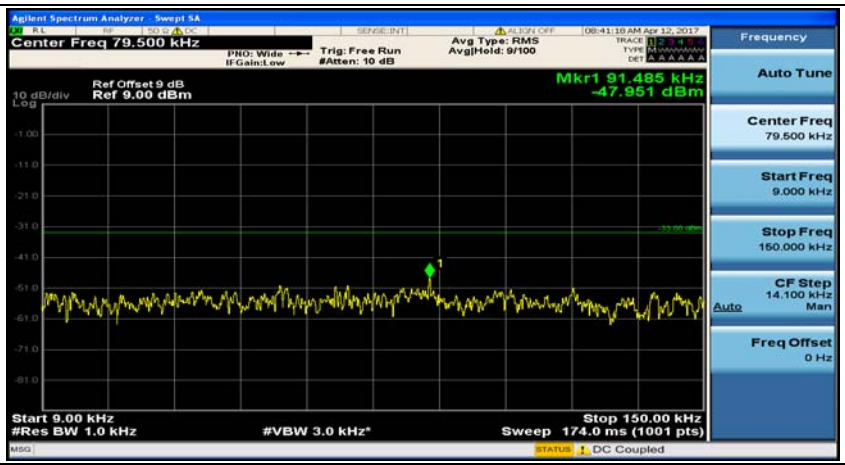

Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
08:40:54 AM Apr 12, 2017
Frequency
Auto Tune
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-50.834 dBm
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 pts)
DC Coupled

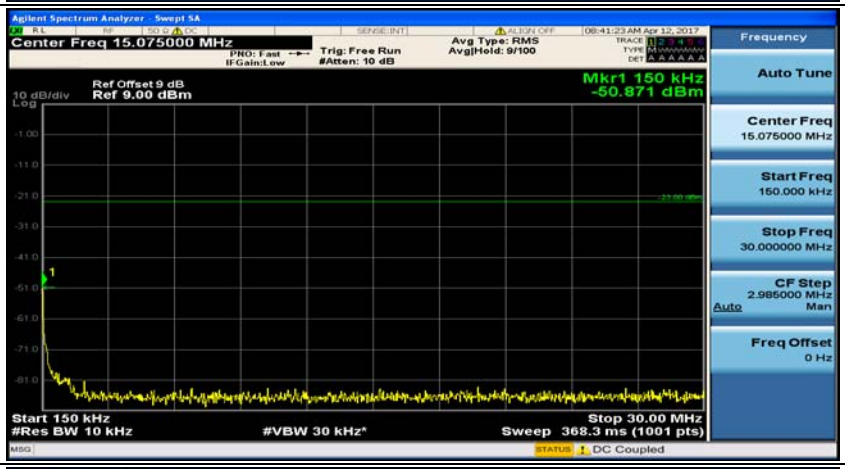

Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 5/100
08:40:58 AM Apr 12, 2017
Frequency
Auto Tune
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.662 GHz
-27.742 dBm
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 pts)

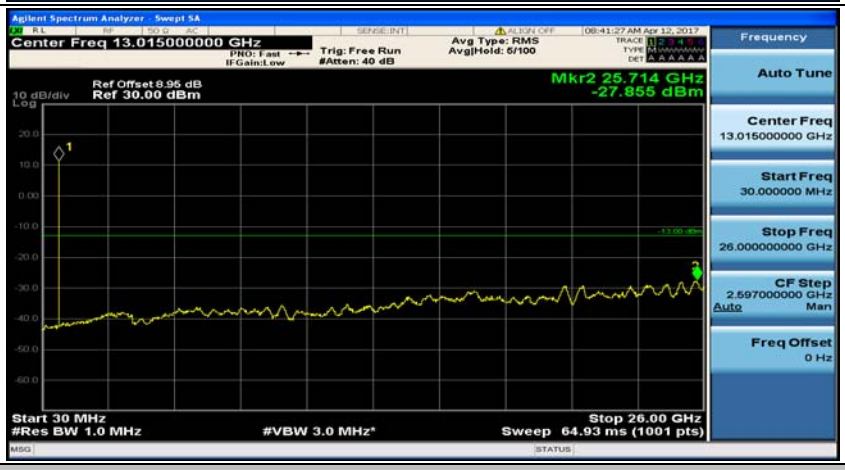
Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#0

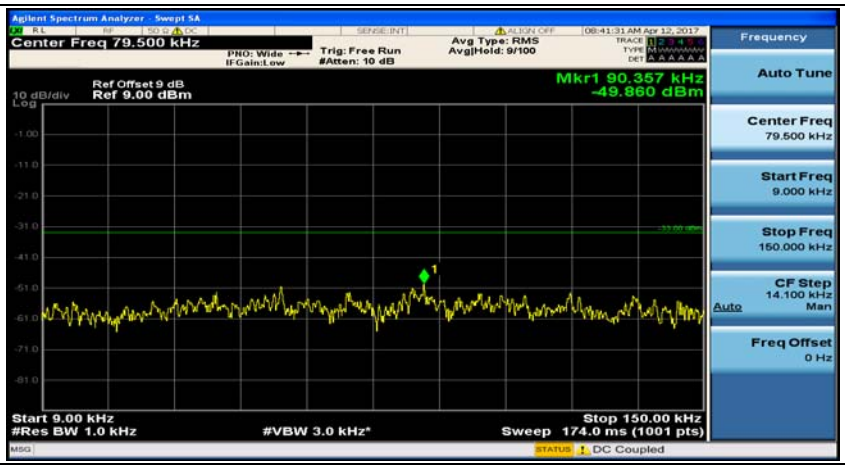


Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#24

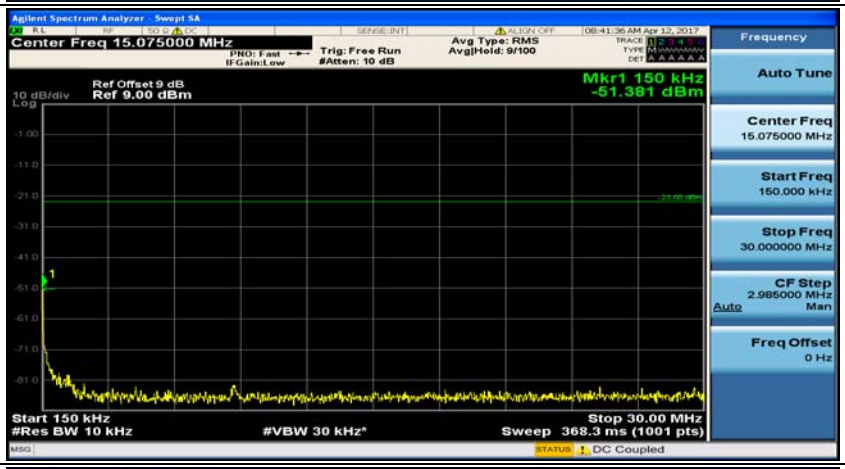


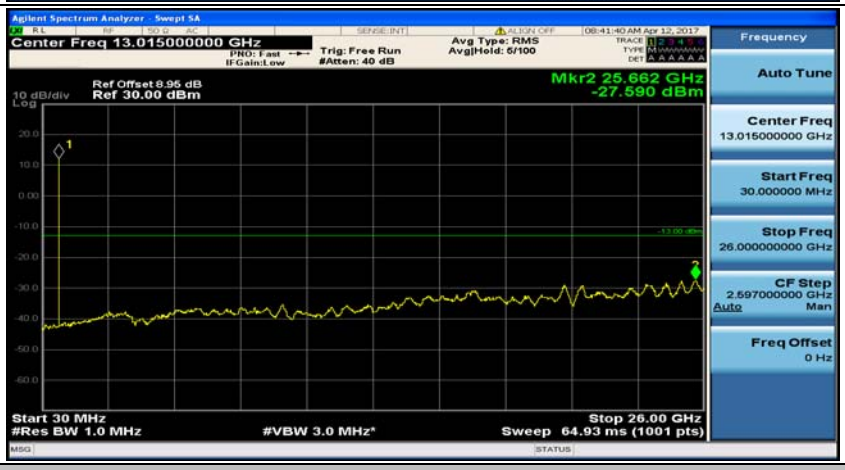




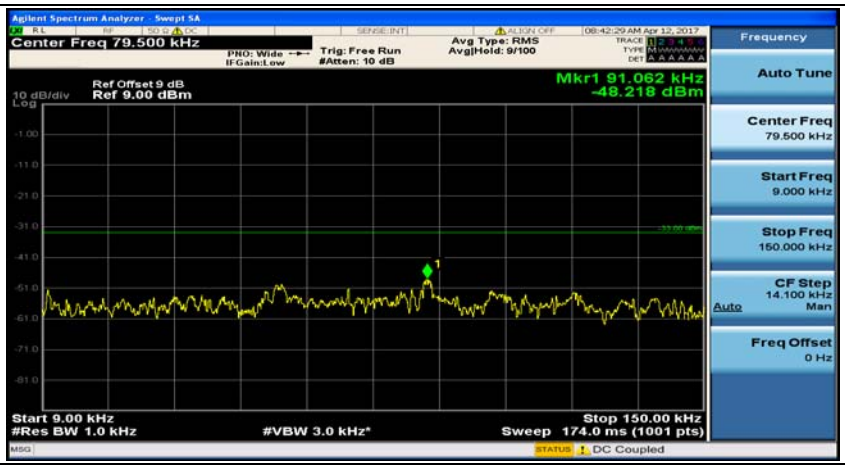
Channel Bandwidth: 10 MHz_LCH_QPSK_1RB#49

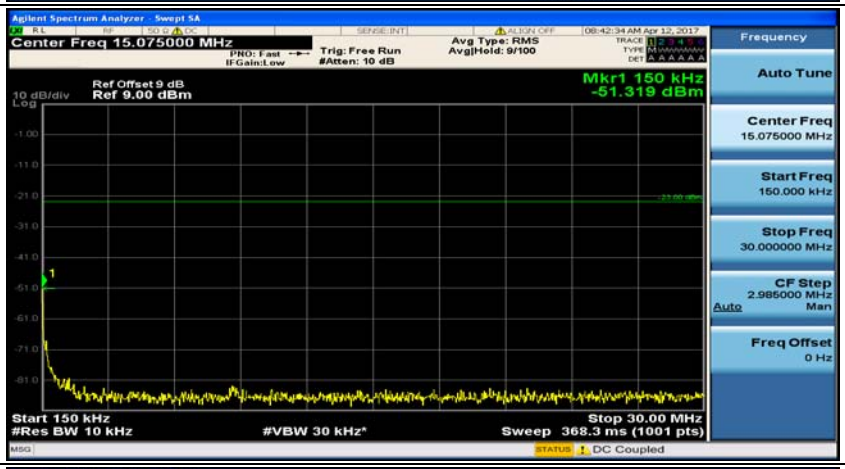


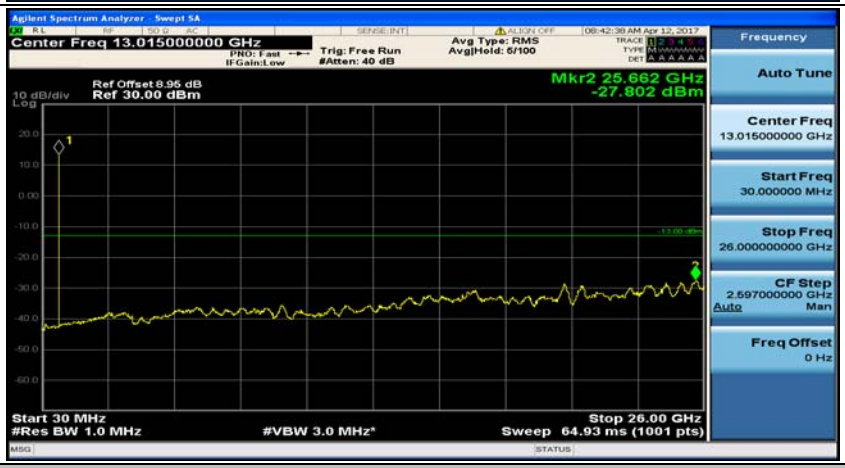




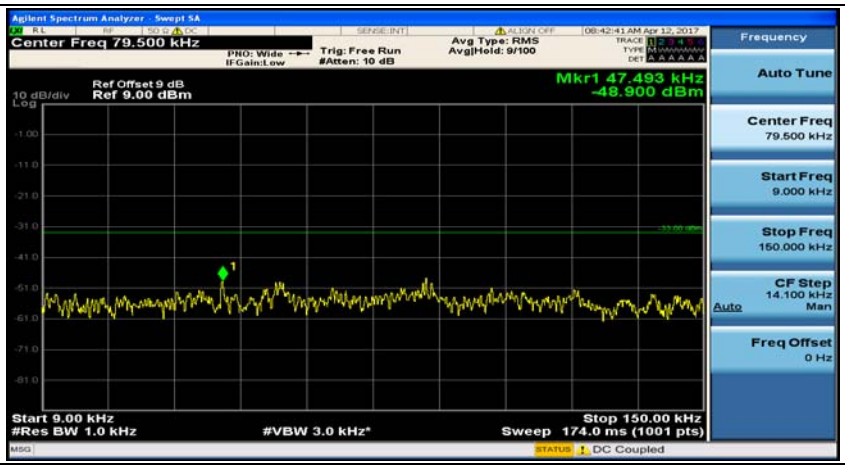
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#0

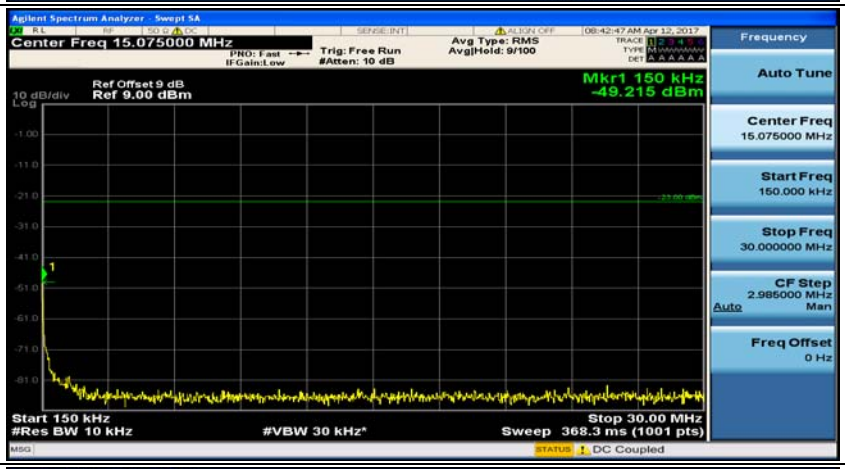


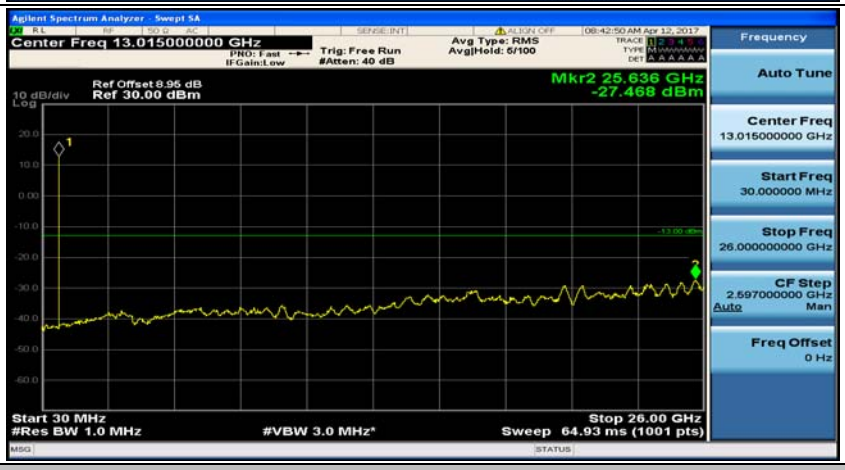




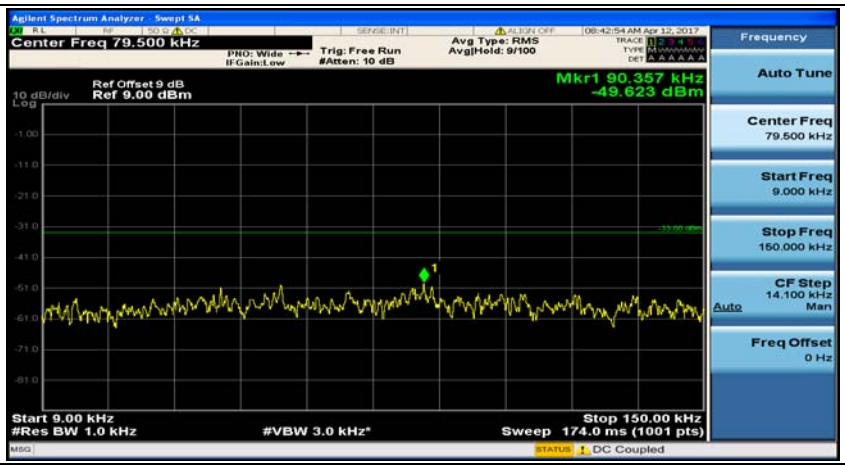
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#24

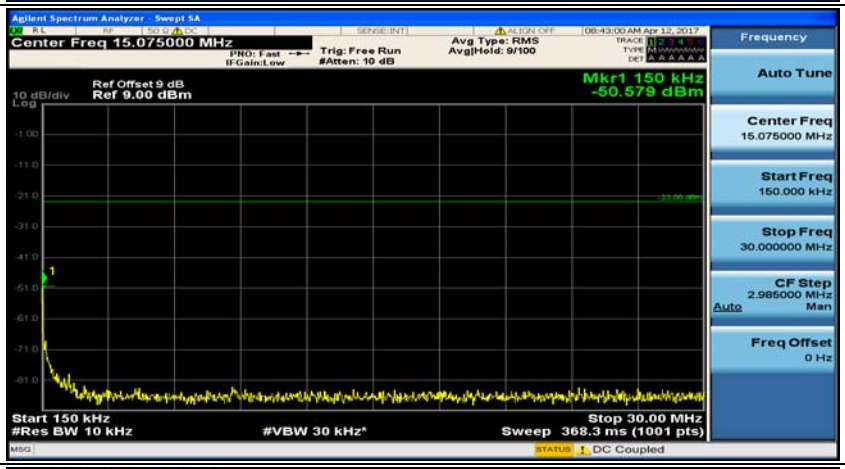


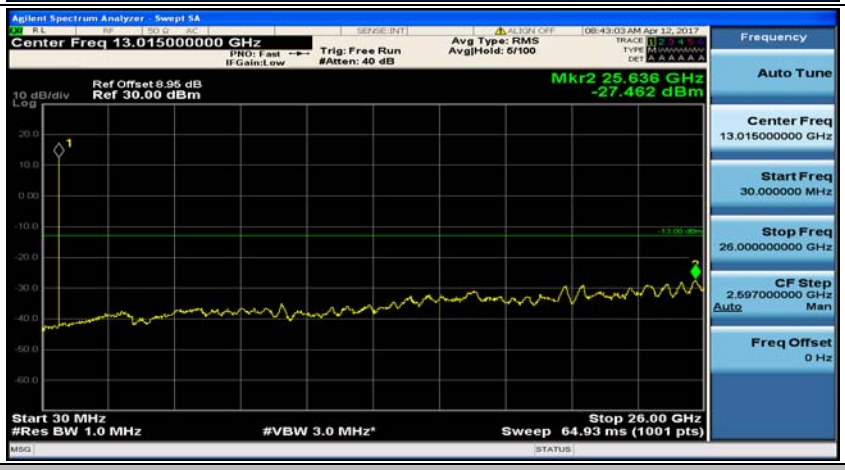




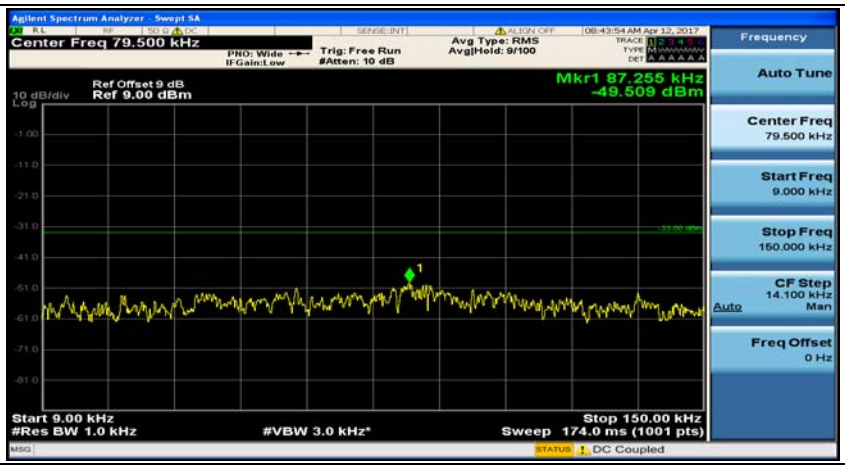
Channel Bandwidth: 10 MHz_MCH_QPSK_1RB#49

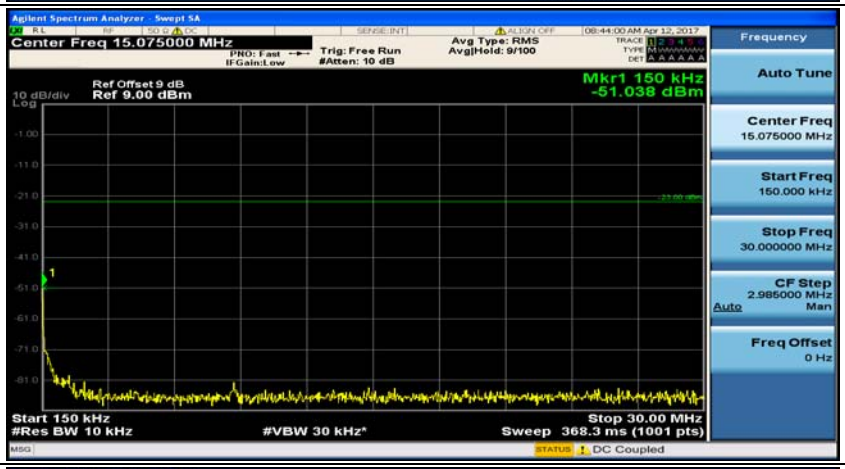


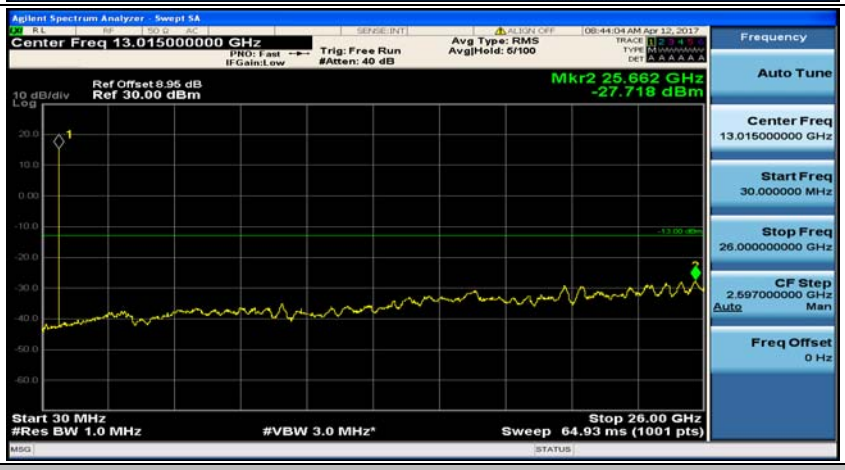




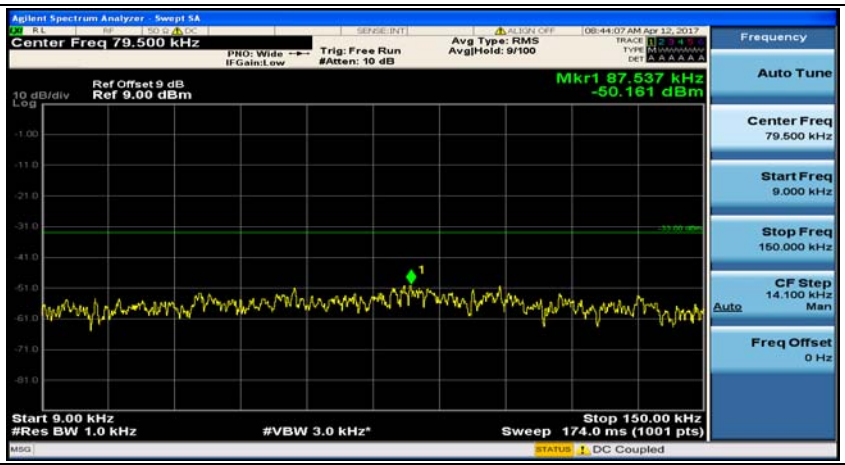
Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#0

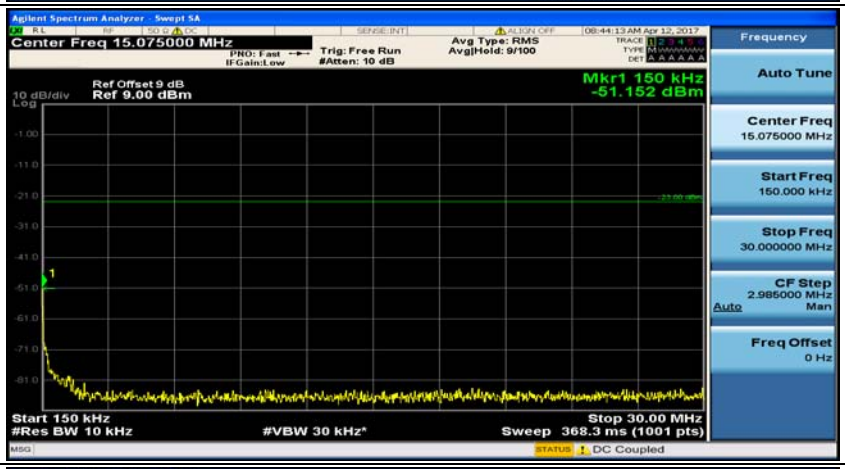




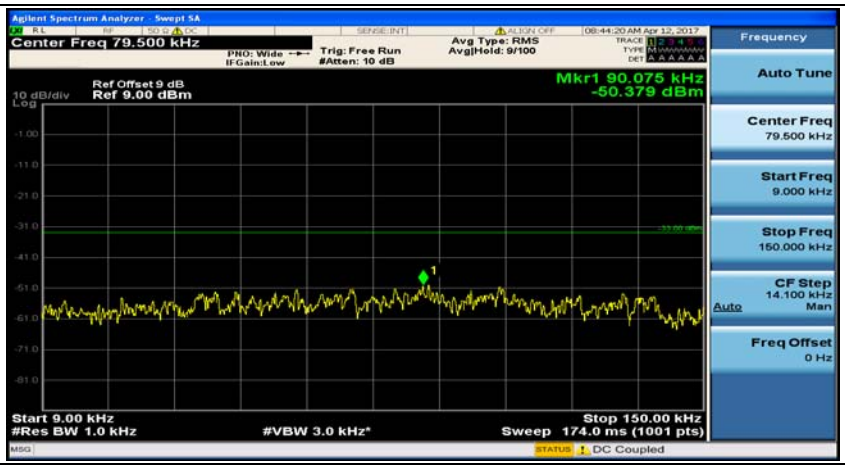


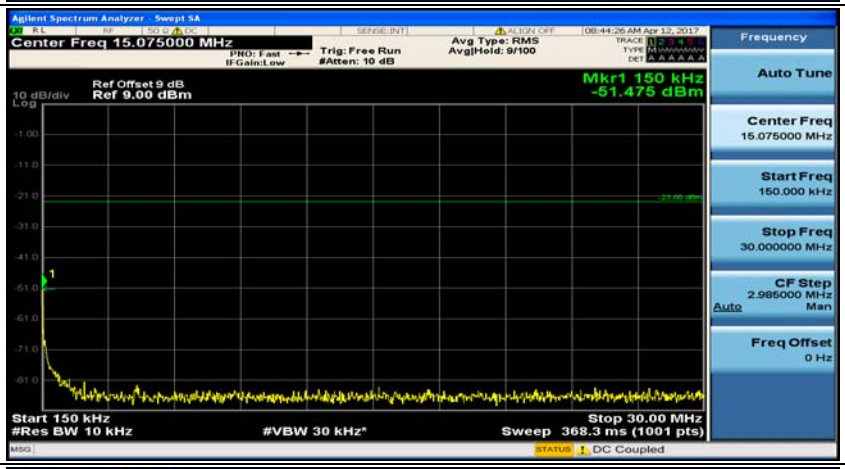
Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#24

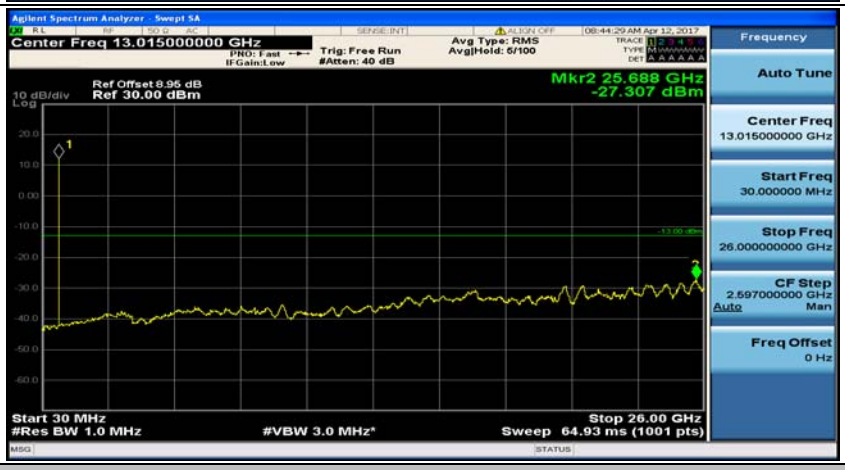




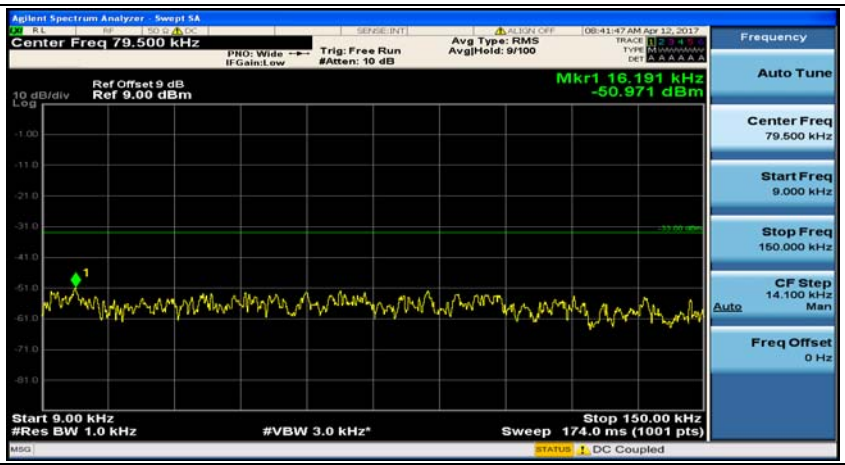
Channel Bandwidth: 10 MHz_HCH_QPSK_1RB#49

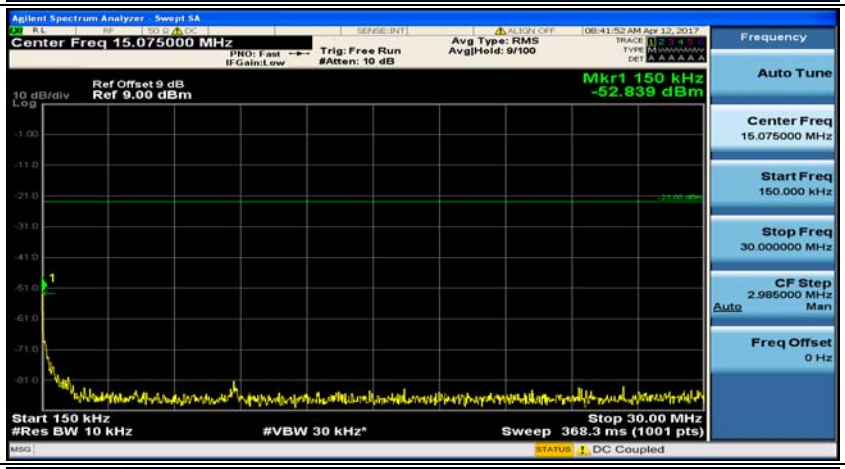


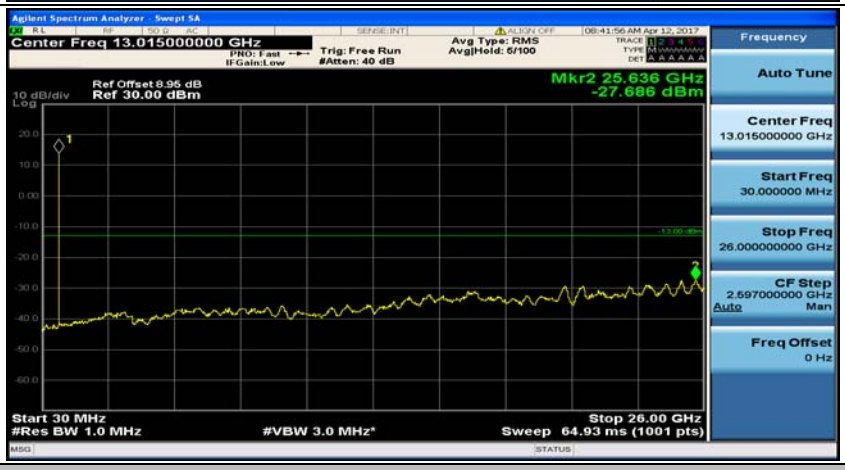




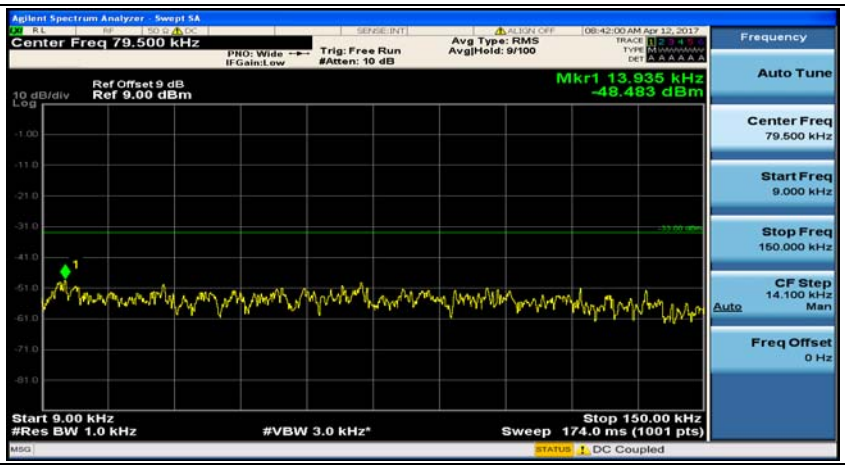
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#0

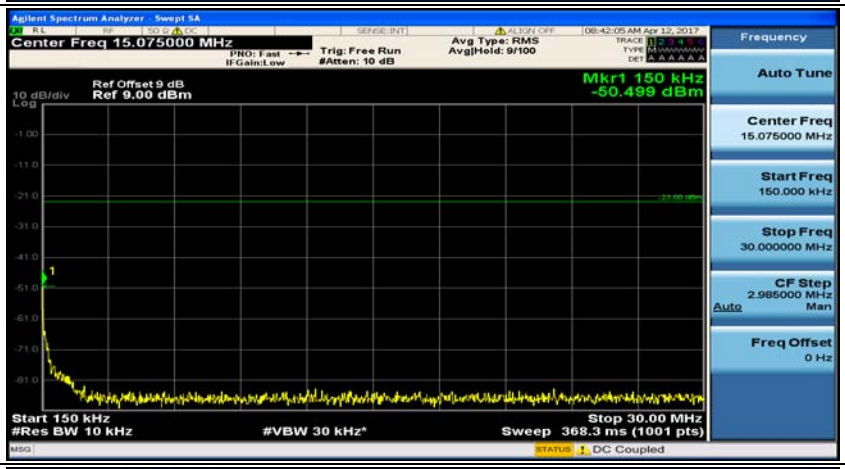


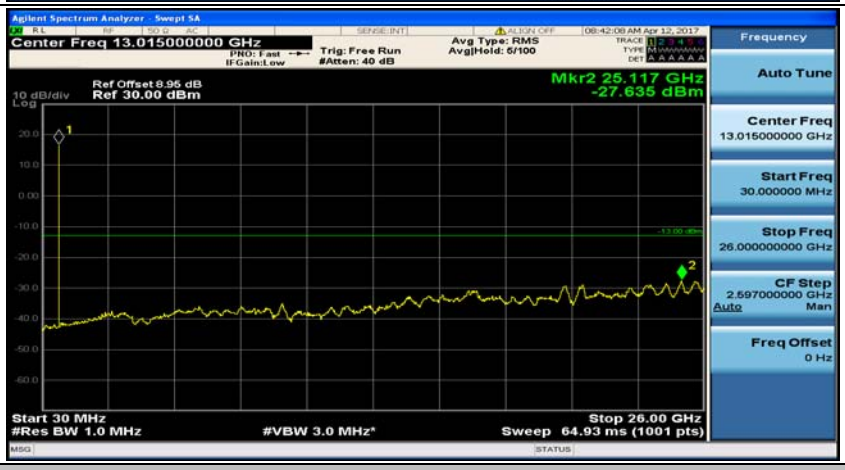




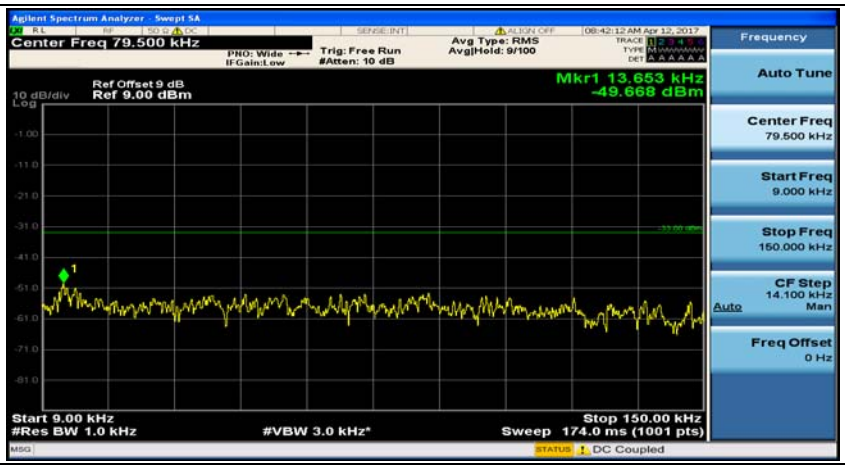
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#24

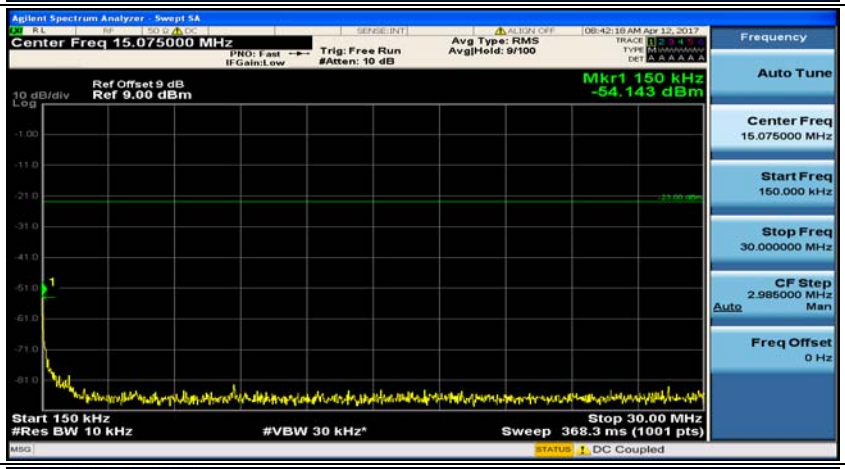


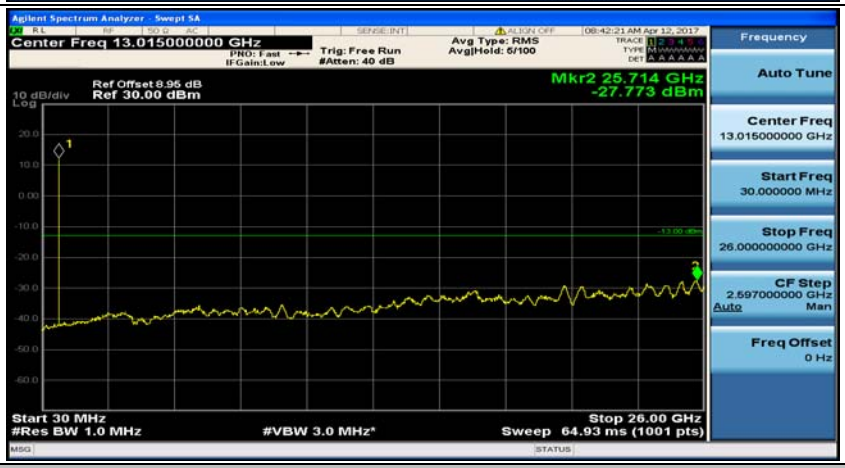




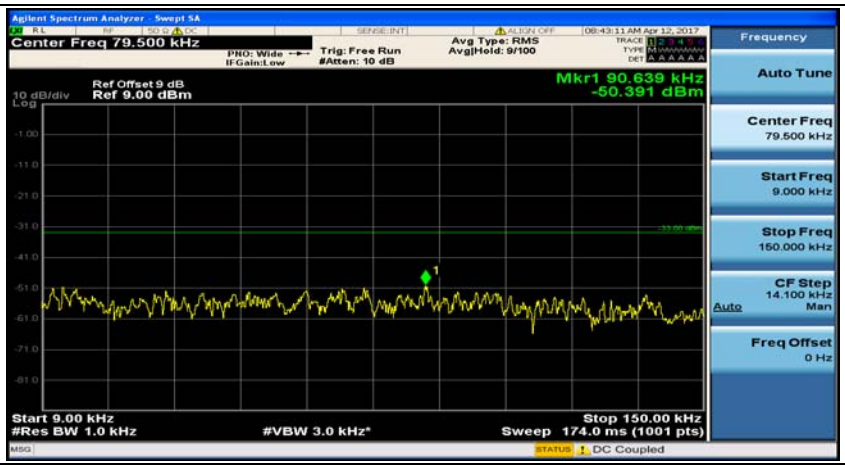
Channel Bandwidth: 10 MHz_LCH_16QAM_1RB#49

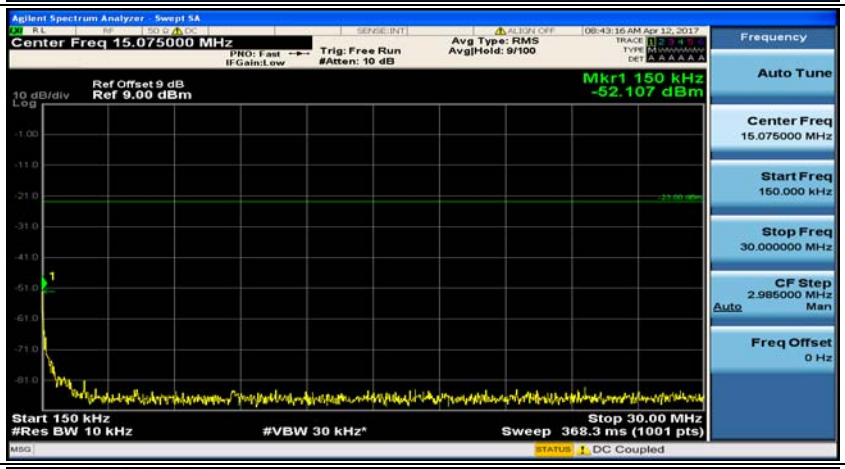


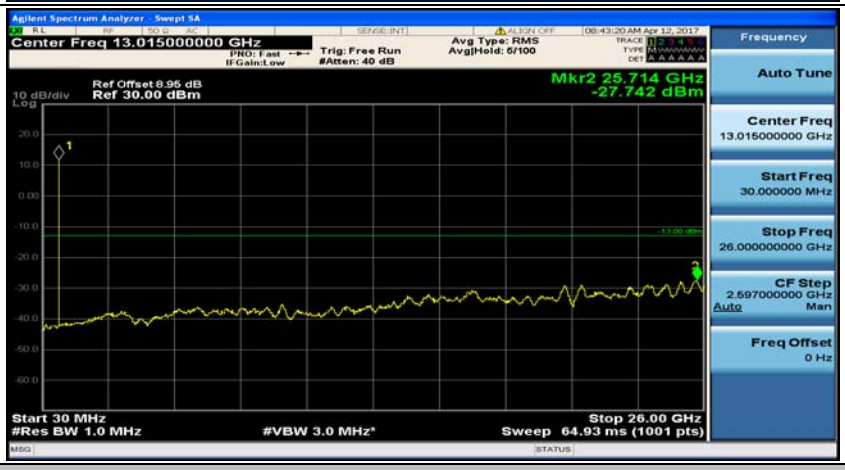




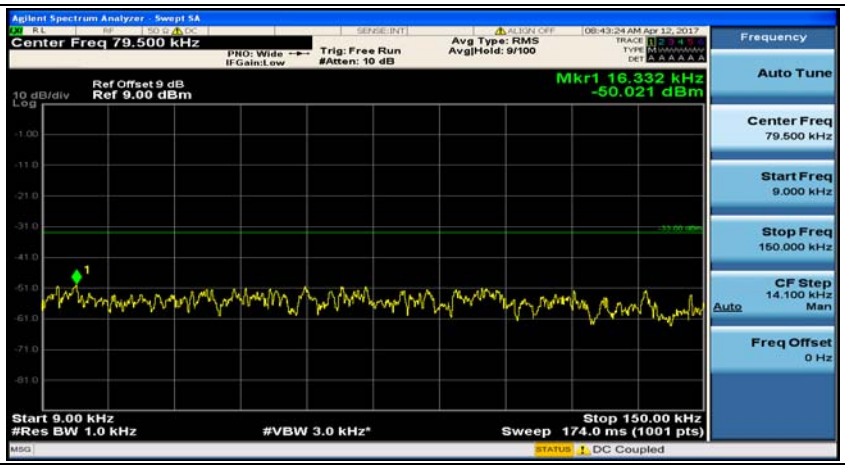
Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#0

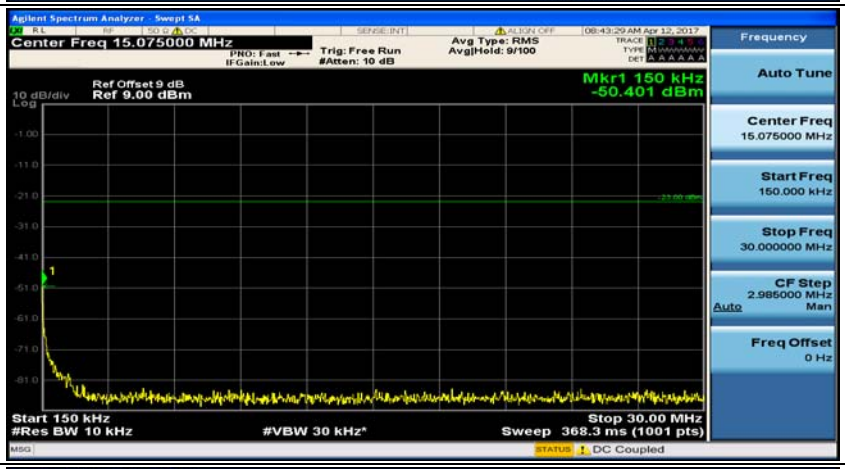


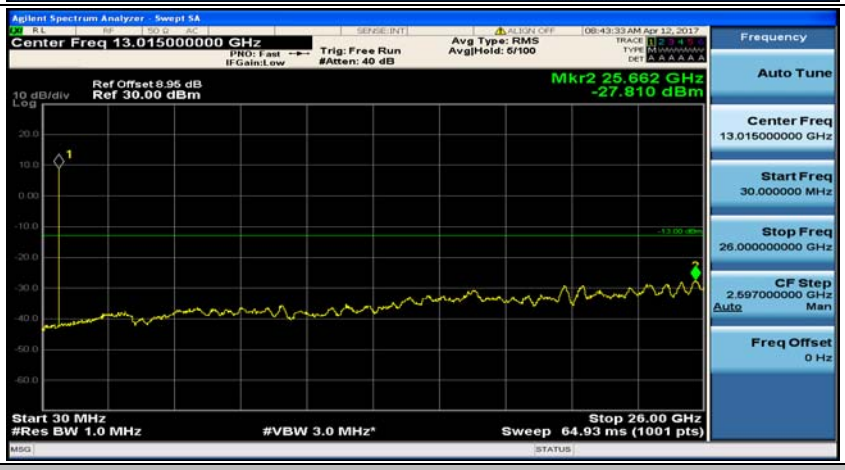




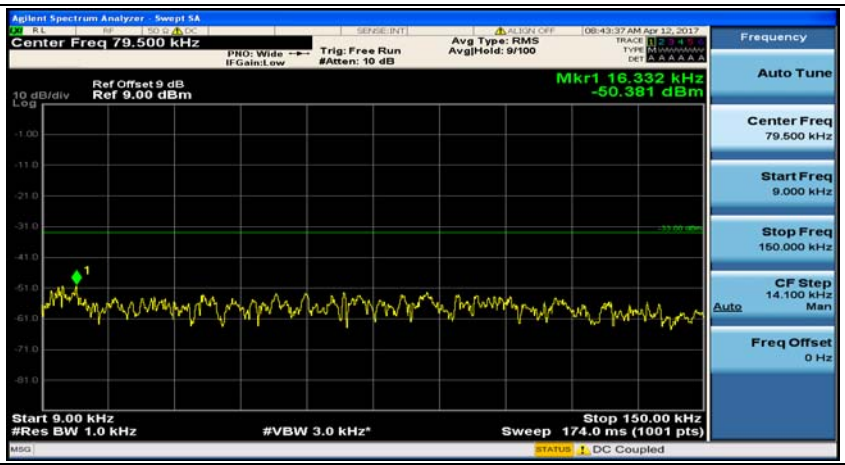
Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#24

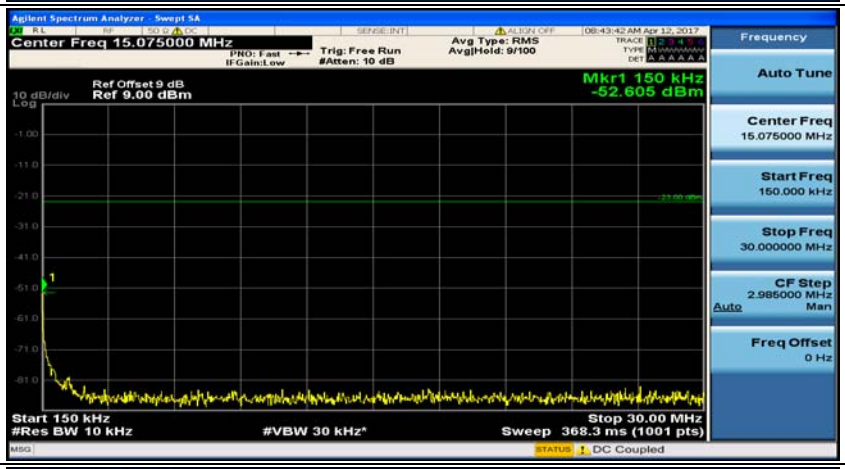


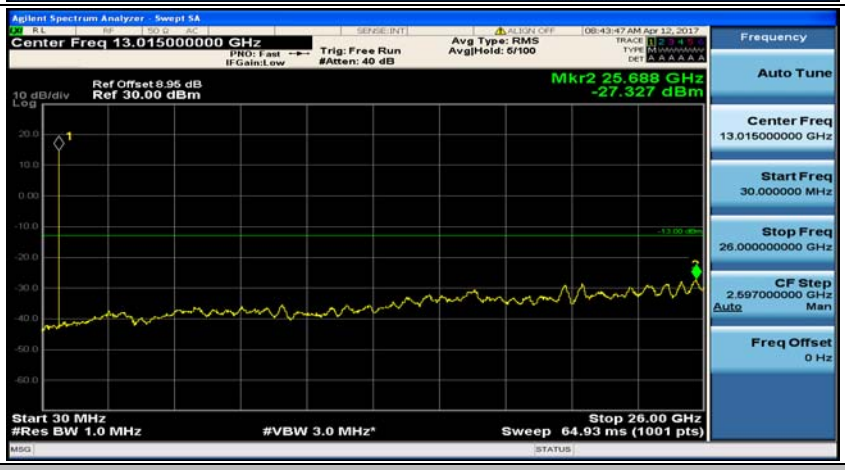




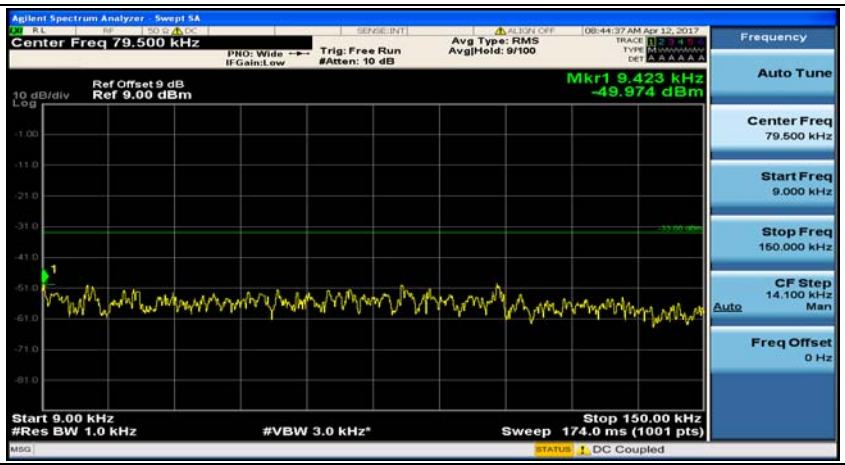
Channel Bandwidth: 10 MHz_MCH_16QAM_1RB#49

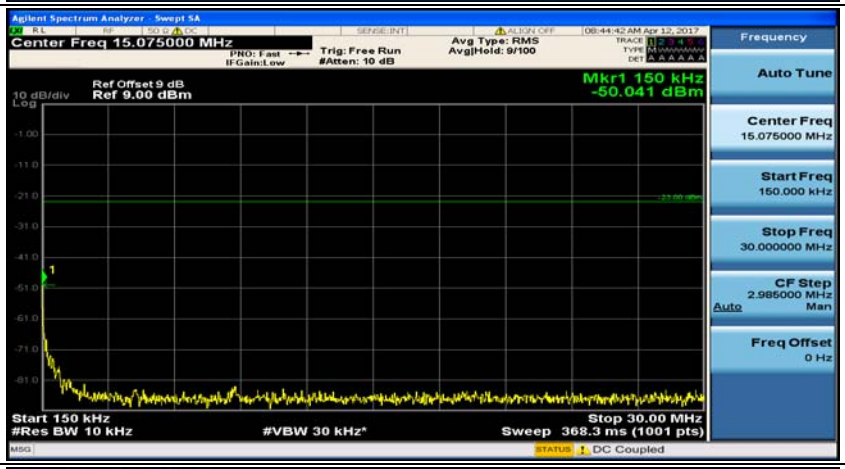


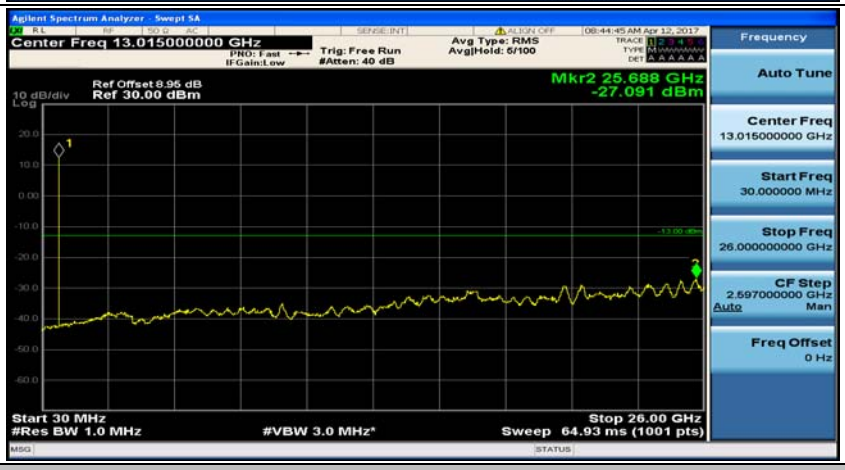




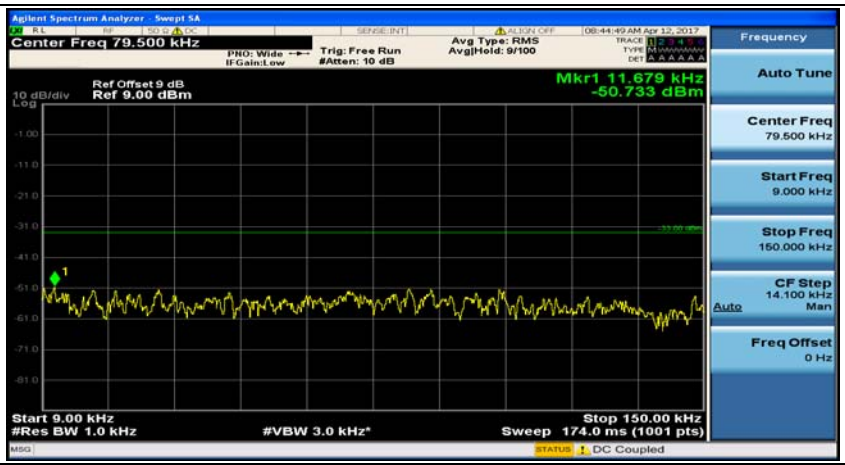
Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#0

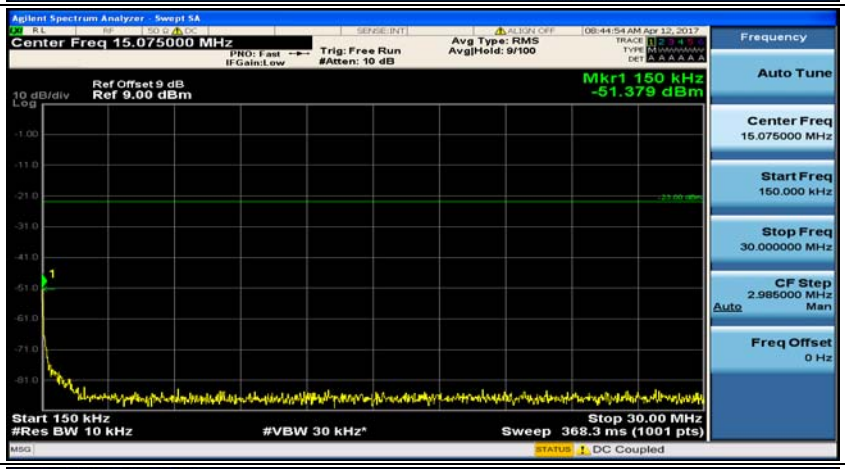




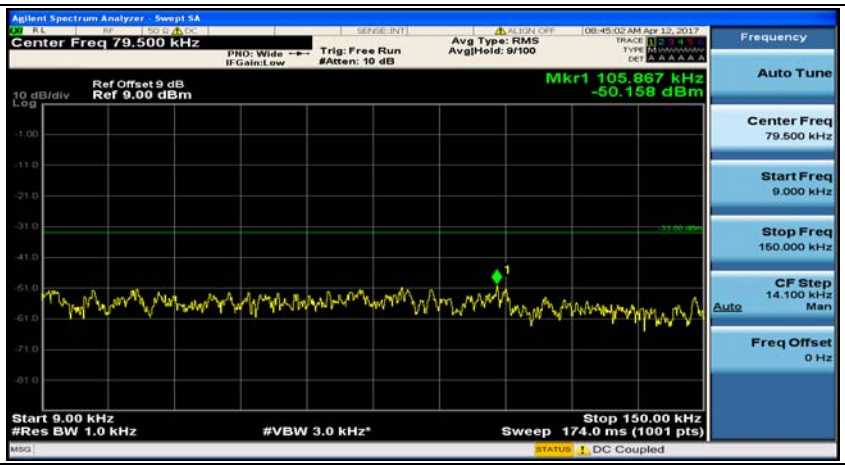


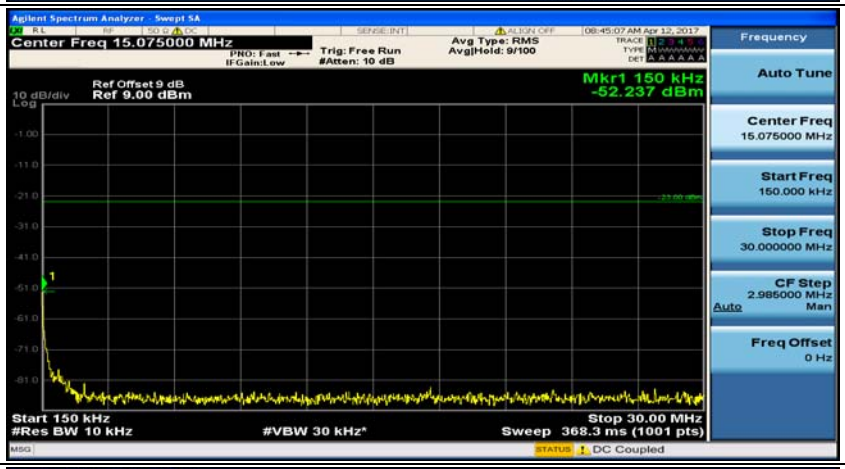
Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#24

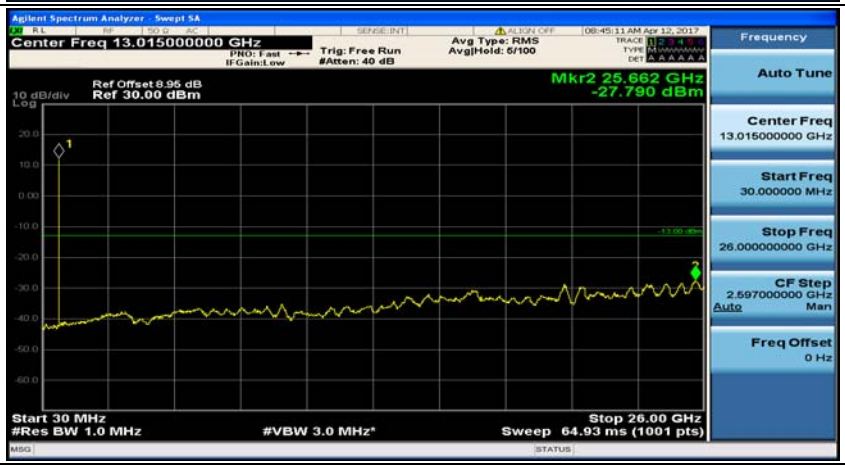




Channel Bandwidth: 10 MHz_HCH_16QAM_1RB#49


Agilent Spectrum Analyzer - Swept SA
Center Freq 79.500 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
08:45:02 AM Apr 12, 2017
Frequency
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 105.867 kHz
-50.158 dBm
Auto Tune
Center Freq
79.500 kHz
Start Freq
9.000 kHz
Stop Freq
150.000 kHz
CF Step
14.100 kHz
Auto
Man
Freq Offset
0 Hz
Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz*
Stop 150.00 kHz
Sweep 174.0 ms (1001 pts)
DC Coupled


Agilent Spectrum Analyzer - Swept SA
Center Freq 15.075000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: RMS
Avg|Hold: 9/100
08:45:07 AM Apr 12, 2017
Frequency
Ref Offset 9 dB
10 dB/div
Log
Ref 9.00 dBm
Mkr1 150 kHz
-52.237 dBm
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz*
Stop 30.00 MHz
Sweep 368.3 ms (1001 pts)
DC Coupled


Agilent Spectrum Analyzer - Swept SA
Center Freq 13.015000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: RMS
Avg|Hold: 5/100
08:45:11 AM Apr 12, 2017
Frequency
Ref Offset 8.95 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr2 25.662 GHz
-27.790 dBm
Auto Tune
Center Freq
13.015000000 GHz
Start Freq
30.000000 MHz
Stop Freq
26.000000000 GHz
CF Step
2.597000000 GHz
Auto
Man
Freq Offset
0 Hz
Start 30 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.00 GHz
Sweep 64.93 ms (1001 pts)

Appendix F: Frequency Stability

Test Result

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	4.7	0.006653	± 2.5	PASS
		VN	TN	1.03	0.001458	± 2.5	PASS
		VH	TN	1.25	0.001769	± 2.5	PASS
	MCH	VL	TN	-1.32	-0.001859	± 2.5	PASS
		VN	TN	0.28	0.000394	± 2.5	PASS
		VH	TN	1.71	0.002408	± 2.5	PASS
	HCH	VL	TN	2.29	0.003210	± 2.5	PASS
		VN	TN	2.62	0.003672	± 2.5	PASS
		VH	TN	3.33	0.004667	± 2.5	PASS
16QAM	LCH	VL	TN	3.71	0.005251	± 2.5	PASS
		VN	TN	1.78	0.002519	± 2.5	PASS
		VH	TN	4.79	0.006780	± 2.5	PASS
	MCH	VL	TN	3.05	0.004296	± 2.5	PASS
		VN	TN	-1.97	-0.002775	± 2.5	PASS
		VH	TN	2.01	0.002831	± 2.5	PASS
	HCH	VL	TN	0.64	0.000897	± 2.5	PASS
		VN	TN	2.6	0.003644	± 2.5	PASS
		VH	TN	1.1	0.001542	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	3.22	0.004558	± 2.5	PASS
		VN	-20	3.99	0.005648	± 2.5	PASS
		VN	-10	2.87	0.004062	± 2.5	PASS
		VN	0	3.61	0.005110	± 2.5	PASS
		VN	10	1.17	0.001656	± 2.5	PASS
		VN	20	0.62	0.000878	± 2.5	PASS
		VN	30	1.49	0.002109	± 2.5	PASS
		VN	40	2.98	0.004218	± 2.5	PASS
		VN	50	1.71	0.002420	± 2.5	PASS
	MCH	VN	-30	1.81	0.002549	± 2.5	PASS
		VN	-20	1.13	0.001592	± 2.5	PASS

		VN	-10	4.01	0.005648	± 2.5	PASS
		VN	0	3.52	0.004958	± 2.5	PASS
		VN	10	1.38	0.001944	± 2.5	PASS
		VN	20	3.02	0.004254	± 2.5	PASS
		VN	30	-0.85	-0.001197	± 2.5	PASS
		VN	40	2.4	0.003380	± 2.5	PASS
		VN	50	3.24	0.004563	± 2.5	PASS
	HCH	VN	-30	-0.21	-0.000294	± 2.5	PASS
		VN	-20	-1.92	-0.002691	± 2.5	PASS
		VN	-10	1.28	0.001794	± 2.5	PASS
		VN	0	1.79	0.002509	± 2.5	PASS
		VN	10	-0.72	-0.001009	± 2.5	PASS
		VN	20	1.01	0.001416	± 2.5	PASS
		VN	30	3.94	0.005522	± 2.5	PASS
		VN	40	0.37	0.000519	± 2.5	PASS
		VN	50	1.43	0.002004	± 2.5	PASS
16QAM	LCH	VN	-30	4.79	0.006780	± 2.5	PASS
		VN	-20	-1.63	-0.002307	± 2.5	PASS
		VN	-10	4.83	0.006837	± 2.5	PASS
		VN	0	1.69	0.002392	± 2.5	PASS
		VN	10	3.53	0.004996	± 2.5	PASS
		VN	20	4.79	0.006780	± 2.5	PASS
		VN	30	3.68	0.005209	± 2.5	PASS
		VN	40	2.68	0.003793	± 2.5	PASS
		VN	50	-0.85	-0.001203	± 2.5	PASS
	MCH	VN	-30	-0.21	-0.000294	± 2.5	PASS
		VN	-20	3.81	0.005340	± 2.5	PASS
		VN	-10	-1.7	-0.002383	± 2.5	PASS
		VN	0	-1.74	-0.002439	± 2.5	PASS
		VN	10	0.67	0.000939	± 2.5	PASS
		VN	20	-0.8	-0.001121	± 2.5	PASS
		VN	30	0.57	0.000799	± 2.5	PASS
		VN	40	-1.81	-0.002537	± 2.5	PASS
		VN	50	-2	-0.002803	± 2.5	PASS
	HCH	VN	-30	2.86	0.004008	± 2.5	PASS
		VN	-20	-0.05	-0.000070	± 2.5	PASS
		VN	-10	4.38	0.006139	± 2.5	PASS
		VN	0	1.55	0.002172	± 2.5	PASS
		VN	10	-0.27	-0.000378	± 2.5	PASS
		VN	20	0.21	0.000294	± 2.5	PASS
		VN	30	-1.61	-0.002256	± 2.5	PASS

		VN	40	3.24	0.004541	± 2.5	PASS
		VN	50	-0.07	-0.000098	± 2.5	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	3.18	0.004485	± 2.5	PASS
		VN	TN	-0.14	-0.000197	± 2.5	PASS
		VH	TN	0.16	0.000226	± 2.5	PASS
	MCH	VL	TN	-1.65	-0.002324	± 2.5	PASS
		VN	TN	0.97	0.001366	± 2.5	PASS
		VH	TN	0.93	0.001310	± 2.5	PASS
	HCH	VL	TN	0.36	0.000506	± 2.5	PASS
		VN	TN	0.09	0.000127	± 2.5	PASS
		VH	TN	4.77	0.006709	± 2.5	PASS
16QAM	LCH	VL	TN	-0.66	-0.000931	± 2.5	PASS
		VN	TN	-0.96	-0.001354	± 2.5	PASS
		VH	TN	3.43	0.004838	± 2.5	PASS
	MCH	VL	TN	-1.68	-0.002366	± 2.5	PASS
		VN	TN	0.64	0.000901	± 2.5	PASS
		VH	TN	4.93	0.006944	± 2.5	PASS
	HCH	VL	TN	-0.29	-0.000408	± 2.5	PASS
		VN	TN	-0.14	-0.000197	± 2.5	PASS
		VH	TN	1.32	0.001857	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
16QAM	LCH	VN	-30	4.85	0.006841	± 2.5	PASS
		VN	-20	-1.93	-0.002722	± 2.5	PASS
		VN	-10	-0.32	-0.000451	± 2.5	PASS
		VN	0	1.61	0.002271	± 2.5	PASS
		VN	10	-1.53	-0.002158	± 2.5	PASS
		VN	20	1.42	0.002003	± 2.5	PASS
		VN	30	-1.71	-0.002412	± 2.5	PASS
		VN	40	-1.01	-0.001425	± 2.5	PASS
		VN	50	1.88	0.002652	± 2.5	PASS
	MCH	VN	-30	3.97	0.005592	± 2.5	PASS
		VN	-20	0.04	0.000056	± 2.5	PASS
		VN	-10	2.57	0.003620	± 2.5	PASS
		VN	0	-1.07	-0.001507	± 2.5	PASS

		VN	10	3.84	0.005408	± 2.5	PASS
		VN	20	4.49	0.006324	± 2.5	PASS
		VN	30	-1.87	-0.002634	± 2.5	PASS
		VN	40	4.24	0.005972	± 2.5	PASS
		VN	50	3.41	0.004803	± 2.5	PASS
	HCH	VN	-30	3.01	0.004233	± 2.5	PASS
		VN	-20	3.09	0.004346	± 2.5	PASS
		VN	-10	3.32	0.004669	± 2.5	PASS
		VN	0	2.38	0.003347	± 2.5	PASS
		VN	10	-0.77	-0.001083	± 2.5	PASS
		VN	20	-0.72	-0.001013	± 2.5	PASS
		VN	30	0.43	0.000605	± 2.5	PASS
		VN	40	3.47	0.004880	± 2.5	PASS
		VN	50	-1.74	-0.002447	± 2.5	PASS
QPSK	LCH	VN	-30	3.17	0.004465	± 2.5	PASS
		VN	-20	2.12	0.002986	± 2.5	PASS
		VN	-10	4.17	0.005873	± 2.5	PASS
		VN	0	4.34	0.006113	± 2.5	PASS
		VN	10	3.01	0.004239	± 2.5	PASS
		VN	20	2.47	0.003479	± 2.5	PASS
		VN	30	-0.03	-0.000042	± 2.5	PASS
		VN	40	0.92	0.001296	± 2.5	PASS
		VN	50	-0.67	-0.000944	± 2.5	PASS
	MCH	VN	-30	2.69	0.003783	± 2.5	PASS
		VN	-20	-0.53	-0.000745	± 2.5	PASS
		VN	-10	2.62	0.003685	± 2.5	PASS
		VN	0	-1.53	-0.002152	± 2.5	PASS
		VN	10	2.07	0.002911	± 2.5	PASS
		VN	20	0.03	0.000042	± 2.5	PASS
		VN	30	4.03	0.005668	± 2.5	PASS
		VN	40	4.71	0.006624	± 2.5	PASS
		VN	50	3.22	0.004529	± 2.5	PASS
	HCH	VN	-30	-1.36	-0.001913	± 2.5	PASS
		VN	-20	-0.77	-0.001083	± 2.5	PASS
		VN	-10	-0.46	-0.000647	± 2.5	PASS
		VN	0	-0.12	-0.000169	± 2.5	PASS
		VN	10	4.52	0.006357	± 2.5	PASS
		VN	20	-1.33	-0.001871	± 2.5	PASS
		VN	30	4.98	0.007004	± 2.5	PASS
		VN	40	2.94	0.004135	± 2.5	PASS
		VN	50	4.21	0.005921	± 2.5	PASS